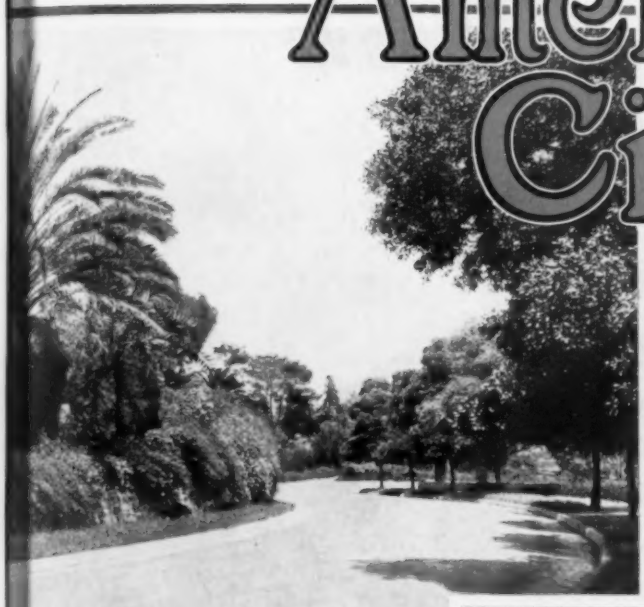
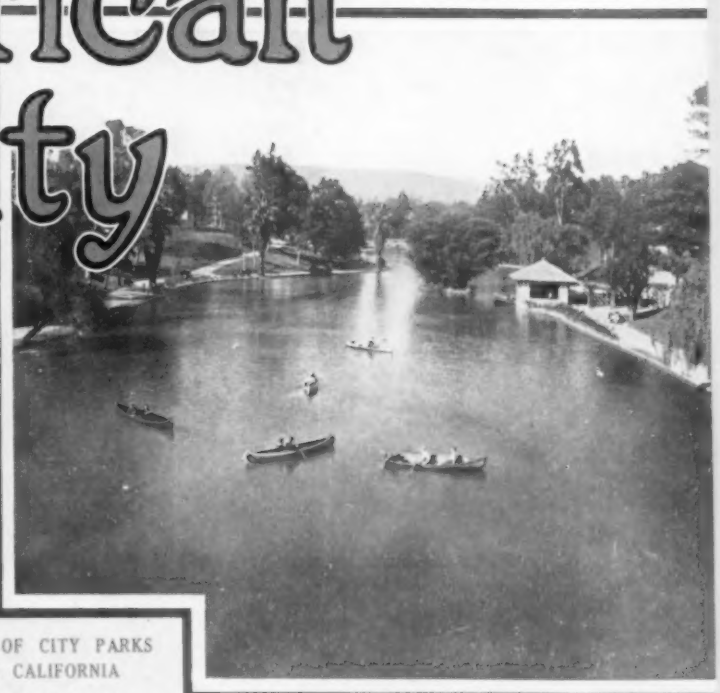
APR 6 1928

April, 1928

Vol. XXXVIII No. 4
50 Cents $4 a Year

The American City

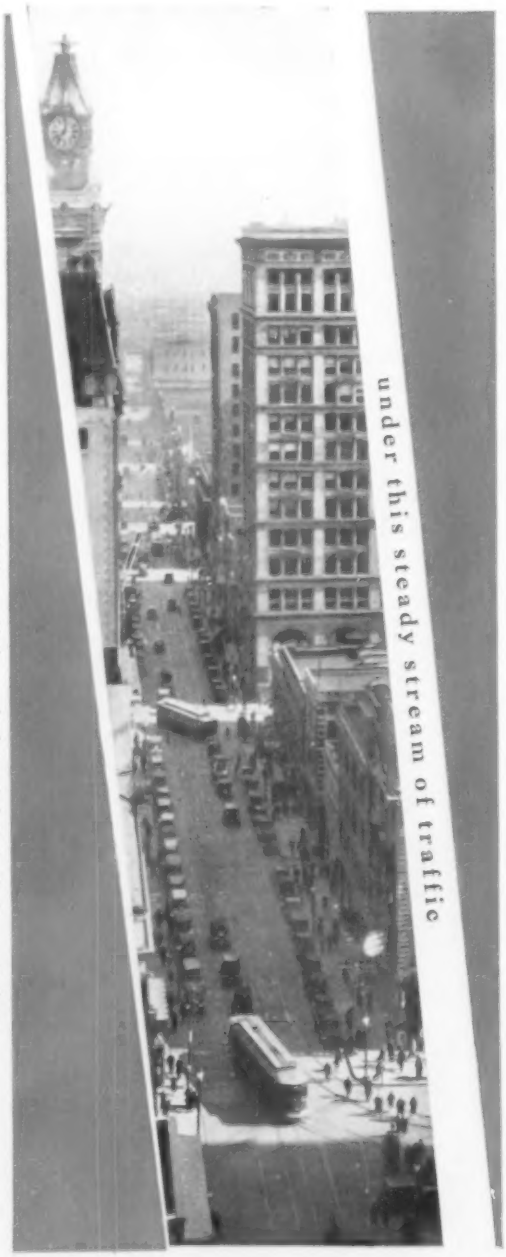




TYPICAL VIEWS OF CITY PARKS IN SOUTHERN CALIFORNIA

Scenes in Westlake, Hollenbeck, Elysian and Lincoln Parks, Los Angeles, and the Ocean Front Park at Santa Monica

fourteen years



Baltimore, Md., is eighth in the list of leading American cities.

Baltimore Street ranks first in the line-up of thoroughfares serving this important city.

Not many streets in the United States carry the volume of traffic which daily passes over Baltimore Street. However, the TEXACO Asphalt pavement constructed on it in 1914 has already served it satisfactorily for 14 years, and is ready for more punishment—lots more.

1349 other American cities also are familiar with the advantages of streets paved with TEXACO.

TEXACO ASPHALT

New York
Houston
Cleveland
Kansas City
Dallas

THE TEXAS COMPANY, U. S. A.

Asphalt Sales Department

17 Battery Place New York City

Chicago
Jacksonville
Richmond
Philadelphia
Boston

Yes—we should like you to mention THE AMERICAN CITY.

HAROLD S. BUTTENHEIM
Editor

THEODORE R. KENDALL
Secretary and Engineering Editor

H. M. OLMSTED
M. V. FULLER
Associate Editors

The American City

443 Fourth Avenue, New York

EDGAR J. BUTTENHEIM
President and Manager

TOM DIX
Vice-President

HERBERT K. SAXE
Treasurer

PRENTICE C. FORD
Advertising Manager

INDEX TO CONTENTS

Vol. XXXVIII No. 4

APRIL, 1928

Airports and Aviation
Miniature Aircraft Contests on Playgrounds 15
Municipal Airport, Long Beach, Calif.. 144
Care for Dependent Children..... 94
City Planning and Zoning
A Paean to the Skyscraper..... 5
Intelligent Long-Term Financing 19
The City Planning Commissions.....96, 120
Can Intelligent Zoning be Done Without a Comprehensive City Plan?..... 108
City Planning and Zoning Gains..... 110
Town Planning in Malaysia..... 114
Zoning Notes 177
Recent Important Court Decisions Uphold Restrictions on Subdivision Platting 179
Civic and Commercial Organizations
Chamber and High Schools Cooperate in "Know Your Home Town" Mass Meeting 140
County Civic Program..... 143
The Veterans' List..... 151
Membership Councils 150
Civic Center for Essen, Germany..... 159
Civic Service
Dignifying Newly Naturalized Citizens 19
Real Civic Pride Displayed by Children. 107
A Working Course in Community Civics 145
Community Trust Idea, Growth of..... 19
Conventions 187
Engineering, Municipal
Who's Who Among City Engineers..... 9
A Topographical Survey Monument.. 122
Finance and Accounting
Debt Reduction by the Clock..... 5
Centralized Purchasing Effects Savings 5
Interest on City Bank Deposits..... 17
The City and the Gasoline Tax..... 17
The Municipal Bond Market..... 17
Special Assessments for Improvements 90
County Expenditures in Ohio..... 96
Successful Bond Election Publicity.... 153
Blanket Insurance for Municipalities.. 169
The Accounting System and the Budget 175
Fire Prevention and Control
A Notable Fire Prevention Record..... 21
Who's Who in Fire Fighting..... 23
Fire Station, Middletown, N. Y..... 131
Revolving Elevated Lights Distinguish Fire Apparatus 145
Routine Fire-Prevention Inspections.... 161
New High-Pressure Pumpers, New York 193
Flowers for Hometown..... 19
Forward Steps 140
Government
Are Independent Boards Advisable for Recreation, Health, Education?..... 101
The Brookings Institution..... 126
Speedy Election Returns..... 189
Gun for Applying Liquids..... 193
Health
The Month in Public Health..... 167
Federal Health Correlation..... 167
The Value of Health Officers..... 167
Disease Due to Bad Housing..... 167
The Standard Milk Ordinance..... 169
Highways
Paved Streets Aid Good Citizenship.... 5
Black Base Pavements..... 7
Surface Treatment of Roads.....7, 97
Curing Cement-Concrete Pavements..7, 119
Gravel and Stone Bases 112
The Paving of New Street, Baghdad... 113
Unusual Scene in Penetration Macadam Construction 125
Street Maintenance and Repairs in South Bend, Ind. 126
Salvaging Broken Stone and Gravel Roads 127
Trunk-Line Maintenance Payments to Cities 132
Asphalt Patching in Galion, Ohio..... 165
A Precast Concrete Curbstone and Drain 189
A Pavement Core Drill..... 191
Committee of Engineers to Study Highways 191
A Tractor-powered Grader..... 191
New Type of Highway Guard..... 195
Home Improvement Contest, Canton, Ohio 140
Legal Decisions 171, 173, 179
Lighting
Lighting of Main Business Streets Increased Fourfold 149
Electric Current Protector for Street Lighting 189
Houston Dressing Up for the Convention 197
Motor Trucks, Wheel-Load Scales for.... 198
Municipal Advertising
Program under California's New Law... 143
Conference and Broadcasting Promote Mercantile and Industrial Interests.. 144
Crookston's "Municipalities' Day"..... 145
Flint's Progress Presented Pictorially 146
Municipal Building, Baltimore..... 147
Municipal Music 15
Municipal Report, How to Judge..... 149
Municipal Street Cars Carry Daily Announcement of Local Events..... 143
Museum Aids in Democratizing Art..... 118
News and Illustrations..... 189
Parks and Recreation
Golf for Small Towns..... 15
Backyard Playgrounds East and West 15
Recreation an Industrial Asset..... 19
The Psychology of City Parks..... 94
Methods of Governing Parks.....99, 101
Parks and Playfields 115
Model Yacht Club 137
Colorado Springs Spends $2.45 per Capita for Public Recreation..... 138
Backyard Playground Contest, Buffalo.. 141
Asbury Park Has New Stadium..... 142
Mayor Promotes Community Recreation 146
Playground and Swimming Pool Occupy Site of Old Brick-Yard and Pond.. 148
An Outdoor Cooking Unit..... 197
Police
Police Training Facilities..... 21
Quick Intercommunication for Police Departments 21
The Relation of the Police and the Courts to the Crime Problem..... 84
Power Plant, Hydro-electric, of Kaukauna. 95
Public Utilities
Lower Rates for Domestic Use of Electricity 131
Small Cities Combine in Utility Rate Controversy 140
Publications 181
Saving Money on Automobile Repairs and Coal 5, 130
Sewers
Sanitary Districts in Missouri.....11, 125
Sewerage and Sewage Treatment in New York State 133
Snow-Fences
Possibility of Natural Snow Fences... 114
Permanent, Portable, Steel Snow-Fences 191
Street Cleaning and Snow Removal
Minnesota Drifts Cleared by Tractors.. 7
A Pick-up Sweeper..... 195
Traffic
County Highway with Traffic Lanes... 21
Polite Reminders of Prohibited Parking 21
Pittsburgh to Install Flexible Progressive Signal System..... 79
To Relieve Congestion in St. Paul.... 87
By-Pass Highways for Traffic Relief.. 88
Pedestrian Tunnels or Signals or Schoolboy Patrols for Safety of Children?. 113
Trees for Northern Cities..... 102
Vocational Guidance by South American City 98
Waste Disposal
Garbage Collection and Disposal in Los Angeles 7, 155
Changes in Refuse Collection and Disposal Recommended for Akron, Ohio 91
Water
Water-Waste Surveys, Old and New..11, 111
Advertising Water-Works 11, 121
Eliminating Algae Tastes and Odors.11, 129
Preparing for Higher Pressure..... 11
A Moral Responsibility Accepted..... 11
Statistical Information Worth Study.. 11
Who's Who in Water Supply..... 13
Adapting Distribution System to New Supply 123
The Interrelation of Water Purification and Sewage Treatment..... 132
Lubricator for Vertical Shaft Centrifugal Pumps 191
Underdrain Tile for Trickling Filters.. 199

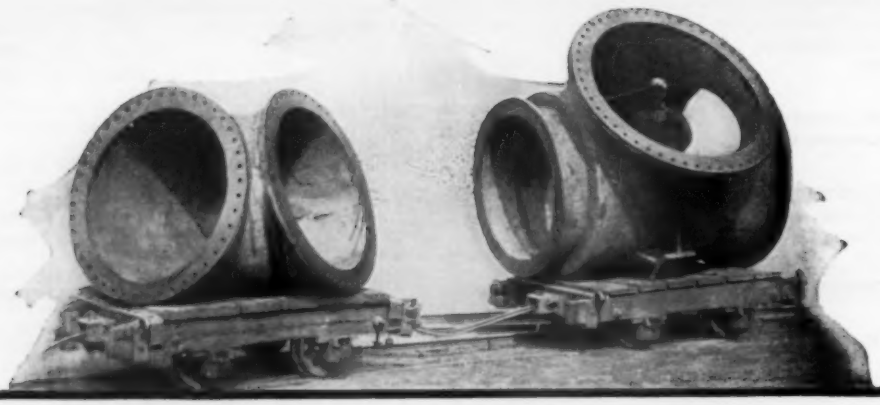
For INDEX *to* ADVERTISEMENTS

See page preceding back cover

The offices of THE AMERICAN CITY are headquarters for information on equipment for municipal and county works. If you want catalogs, prices or names of manufacturers, write or wire us.

Annual subscription rate to any part of the world, $4.00; single copies, 50 cents, back numbers available. Entered as second-class matter, April 16, 1923, at the Post Office at New York, N. Y., under Act of March 3, 1879. Issued monthly by American City Magazine Corporation. Publication Office, 443 Fourth Ave., New York; Chicago Office, Tribune Tower.

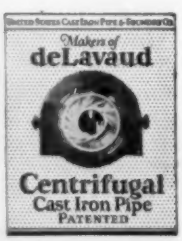
Printed in U. S. A.



Large standard fittings and special castings

In our various plants we have unusual facilities for handling the largest standard fittings and for making especially heavy castings.

WHILE standard connections should be adopted as far as possible, it sometimes happens that an exception has to be made to meet unusual conditions. When such conditions arise communicate with our nearest sales office. Our equipment is so complete that oftentimes the castings can be designed to fit equipment already available at one of our plants. This saves the cost and lessens delivery time.



United States Cast Iron Pipe and Foundry Company

General Offices:
Burlington, New Jersey

SALES OFFICES

Philadelphia: 1421 Chestnut St.
Chicago: 122 So. Michigan Blvd.
Birmingham: 1st Ave. & 20th St.
Buffalo: 957 East Ferry Street
Cleveland: 1150 East 26th Street
New York: 71 Broadway
San Francisco: 3rd & Market Sts.
Pittsburgh: 6th & Smithfield Sts.
Dallas: Akard & Commerce Sts.
Kansas City: 13th & Locust Sts.
Minneapolis: 6th St. & Hennepin Ave.

Yes—we should like you to mention THE AMERICAN CITY.

Paved Streets a Psychological Aid to Good Citizenship

EMPHASIZING the well-known fact that poorly kept, old-fashioned streets retard progress, and that improved, hard-surfaced streets are conducive to the growth and happiness of a community, Mayor Marcus Sulzer of Madison, Ind., speaking at the recent Purdue University Road School, pointed out the psychological effect which a newly paved street may have on the improvement of an entire neighborhood.

"This," said Mayor Sulzer, "I found especially noticeable in the improvement on West Main Street in Madison. Before the street improvement this part of the street had a slovenly, undignified appearance, but now the lawns have been graded and the entire surroundings beautified and improved. Indeed, it appears like a different locality. A place previously poor and neglected is now a residence center where anyone is proud to live.

"Cleanliness and optimism, which come with these progressive improvements, are beneficial in the maintenance of law and order. They make people of a locality optimistic and proud of themselves and their surroundings. Many who did not care how dirty or full of rubbish the old streets were, now, instead of kicking things on, kick them off the street.

"In residence sections bordering the new-style streets, and grass and flowers, pleasing to the eye, beautifying the surroundings and making the air richer with their perfume . . . one man improves, his neighbor in emulation follows suit, and then another and another until the entire locality becomes new and modern."

A Paean to the Skyscraper

(In which most city planners and zoners will gladly join when more adequate public control is secured over the bulk of buildings and open spaces around them)

THE skyscraper is far and away the most important architectural achievement of America, her great gift to the art of building. In its train has come the most brilliant era of structural engineering that the world has ever known. From the bottom of the lowest caisson, where one hundred feet below the surface the pneumatic drills have ground to a level the bones of mother earth, to the top of the highest pinnacle, where the staccato notes of the steel riveter drown out the hum of aeroplanes, the vast pile of the skyscraper is fraught with the best construction efforts of the American mind. The engineers, civil, electrical, mechanical, sanitary, have vied with each other in perfecting the application of their science, and the same emulation has existed among the trades—the masons, the carpenters, the plasterers, the glaziers, the painters; the setters of marble, of ornamental iron, of mosaic, and back of them the manufacturers of brick; the quarry men who hew the stone; the great mills that saw the lumber and fabricate the cabinet work; the kilns that bake the terra cotta; the furnaces that roll the steel. These with a myriad others form a vast army whose labors now constitute, next to agriculture, our greatest industry—an army that builds

Items and Abstracts *for* MAYORS AND CITY MANAGERS

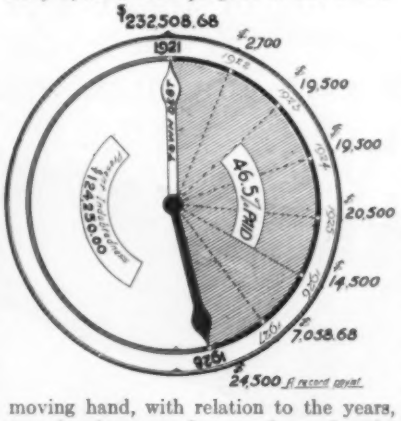
and does not destroy; an army whose march along the crowded ways of life is marked by monuments of stone and steel pulsating with human life, not by mute crosses in the poppy fields.

Scorn not the skyscraper! Its eyes gaze down from immeasurable heights on a welter of humanity and machinery. Its shining flanks are dappled with shadows of aeroplanes that "laugh as they pass in thunder," while "sublime on their towers" the mysterious antennae "join cape to cape over a torrent sea."

—From "The Story of Architecture in America," by Thomas E. Tallmadge.

Debt Reduction by the Clock

THE town of Springfield, Vt., has reduced its debt from $232,508.68 to $124,250.00 in seven years—a decrease of 46.5 per cent. This is shown by the accompanying graph, taken from the report of the Municipal Manager and Treasurer, R. M. Wilcomb, for the year ended February 1, 1928. The progress of the clock's



moving hand, with relation to the years, was far from regular, as shown by the figures outside the edge of the diagram, the annual payments varying from $2,700 to the record amount of $24,500, last year. The clock diagram makes a striking presentation of statistical information; in this instance the effect might have been clearer by making the seven sectors proportionate to the amounts paid.

Economy in Automobile Repairs

IN Syracuse all city-owned cars must be repaired at the municipal garage. A schedule of prices to be charged has been prepared, which indicates, says the Bulletin of the New York State Bureau of Municipal Information, a saving of thousands of dollars in the cost of upkeep of city-owned motor vehicles.

Centralized Purchasing Effects Big Savings in Paper, Printing, Gasoline and Other Supplies

ROCHESTER, N. Y.—Under its new city-manager form of government Rochester is making rapid steps in reorganizing its purchasing division, known as the Bureau of Purchase and Supply. This organization consists of the Purchasing Agent; Deputy Purchasing Agent, in charge of all real estate, all of the purchasing and sales of city real estate now being handled through this bureau; a typist for the writing of general orders; a secretary who does the personal work of both the Purchasing Agent and the Deputy, as well as handling the perpetual inventory; a general clerk, who looks after the checking of invoices, mail, etc.

A new stores room now under way will handle all general stock used by all departments. Through central purchasing we are in position to consolidate many items of a general nature that permit of purchasing in quantity. Such purchases of quantity items will be carried in our central stores room and distributed on departmental requisitions.

This also affects our general printing. We are operating a multigraph room with two electrically operated machines, where all general city forms are printed. This division permits the Purchasing Agent to secure his paper in large quantities at a saving of from 25 to 30 per cent on the paper and a large saving on the printing. The later saving varies largely, depending upon the quantity and nature of forms as printed, but approximates from 50 to 75 per cent.

The handling of our printing in this manner has done away with the issuing of purchase orders for single or individual printing jobs. As an illustration we may refer to requisitions received from our Police Bureau for various forms. On each form printed it was necessary under the old method to issue a purchase order for each individual requisition or order. Under the new method we save the making out of approximately 300 purchase orders for paper, to say nothing about the additional orders for having the forms printed.

Such items as gasoline, oils, lumber, etc., we advertise in our daily paper and the Bureau of Purchase and Supply mails out specifications to various concerns which handle the various classifications of merchandise as the requirements may arise. Our recent purchase of four carloads of gasoline, amounting to approximately 32,000 gallons, was secured on a rising market at 9.9 cents per gallon. The retail market at this time advanced two cents per gallon.

On general merchandise we use a regular quotation form, and where quantities of various items are required this form is sent out to various vendors, and purchase orders are placed strictly on a basis of quality and price. Of course, this is a big factor. The central purchase bureau makes for pleasanter relations with the various vendors as well as being profitable for taxpayers.

W. E. ANDREWS,
Purchasing Agent.

TRUSCON STEEL ROAD FORMS

SAVE CONCRETE!

All Truscon Steel Road Forms are thrown down 1/8″ in 2″ on the outside head of the rail, which conforms with a 3″ crown of road. With this arrangement, striking off is done on the inside of the Road Form instead of the outside, resulting in a saving of about 2 1/2% of concrete over the entire road surface. The numerous other

advantages which these forms possess are described in detail in our bulletin number 653. A copy will be sent on request.

TRUSCON STEEL COMPANY, YOUNGSTOWN, OHIO

Manufacturers of a complete line of Reinforcing Products for Concrete roads and pavements—Welded Steel Fabric for permanence; Contraction Joints for the elimination of cracks; Rib Bars for supplementary reinforcing; Curb Bars for concrete curb protection; Steel Road Forms for economical construction.

Curing Concrete with Asphalt

THERE has been developed in the West a process which seems to have remarkable advantages for the curing of concrete pavements. By this method, known as the "Hunt Process," a special mixture of Bermudez and Trinidad asphalt and Gilsonite is sprayed on the surface of the pavement immediately after the surface is finished by belting and before the pavement has even dried out on the surface. The value of this method of curing and the extent to which it has been used in Los Angeles are described in an article by John C. Shaw, City Engineer, Los Angeles, Calif., in this issue of THE AMERICAN CITY.

Items and Abstracts for ENGINEERING AND HIGHWAY DEPARTMENTS

Save the Surface and—

IN the highway field the well-known slogan of the paint trade, "Save the Surface and You Save All," cannot be taken as a whole, for every highway engineer in the last five years has come to realize fully the importance of subgrade and base course. From the standpoint of the user of the highway, the surface is all-important. If it is smooth, he cares little of what it may be composed, but if wavy, rough or bumpy, the eternal wrath of the user descends upon the local highway department. An abstract of the valuable survey of the surface treatment field presented by C. N. Connor, Low Cost Improved Roads Investigation, Highway Research Board, appears in this issue of THE AMERICAN CITY. It is particularly valuable, as it outlines how the surface treatment field came into prominence and then takes up in detail the materials, methods of construction, maintenance methods, costs and service of roads built by the skin surface treatment or penetration method, the mixed-in-place method cold, and the pre-mixed method, hot or cold. Mr. Connor's survey covers the United States from Canada to the Gulf and from Atlantic to Pacific.

Los Angeles Sells Its Garbage

BY the passage of a Los Angeles city ordinance making it illegal for any person, firm or corporation to transport garbage through the city streets, it becomes mandatory for every hotel, restaurant and provision dealer or other large producer of garbage, which is defined as the refuse that results from preparation and consumption of human food, to dispose of its garbage by delivery at the curb to municipal collectors. Collection is made twice a week in the residential district and every night in the congested district by the use of mule-drawn wagons and motorized equipment. It costs $8 per day to operate a one-man horse-drawn unit, and $23 per day to operate a three-man truck unit. Analyses of costs show that for any ordinary route within the cruising radius of a team operated by one man, it is more economical than a truck operated by three men for collecting garbage. Disposal was formerly by reduction, but as costs mounted and the sale of the by-products brought in less revenue, a contract was made with a large land-holding company to buy the garbage for 60 cents per ton and pay $1.20 per ton to transport the garbage 60 miles out of town to the hog ranch. As the company prospers, it is indicated that the garbage delivered is worth the $1.80 per ton which it costs. The ranch supports 40,000 hogs, which consume an average of 19 pounds of garbage per hog per day.

Natural or Artificial Snow-Fences

THE problem of drift prevention during the winter is a serious one, and while studies must be made during the winter months to determine the location and possible causes of drifts, the spring and summer are the times to take action to prevent the recurrence of drifts across or along roadways the coming winter. In his article in this issue of THE AMERICAN CITY, R. A. Drought, of the Department of Horticulture, University of Wisconsin, discusses the possibility of planting trees at 50-foot intervals or shrubbery at 3-foot intervals at a sufficient distance back from the road to furnish a windbreak or natural snow-fence. The original cost and maintenance charges for both the artificial and the natural snow-fences are given. Mention is not made, however, of the beauty added to a road by the planting of trees, which increases its scenic value during the summer and which has a utilitarian value during the winter.

Black Base Pavements

BLACK base in the South is neither a novelty nor an innovation. Some of the earliest black base laid in the South was a project of approximately 30,400 square yards on Liberty Street, Savannah, Ga., in 1889. This pavement was resurfaced in 1908 and, from a recent report, the pavement is in good condition and rendering excellent service today. Although asphalt streets were laid in Washington, D. C., as early as 1876, the use of bituminous concrete as a base course in the Southeast probably dates back to the laying of the Savannah project 38 years ago. The black base pavements in Washington are the oldest of that type of which I am aware. Many thousands of yards are now in existence and range in age from 35 to 45 years.

—Warren H. Booker, consulting engineer, Charlotte, N. C., in a paper presented recently at the sixth Annual Asphalt Paving Conference, Atlanta, Ga.

Minnesota Snow Drifts Easily Cleared by Tractors

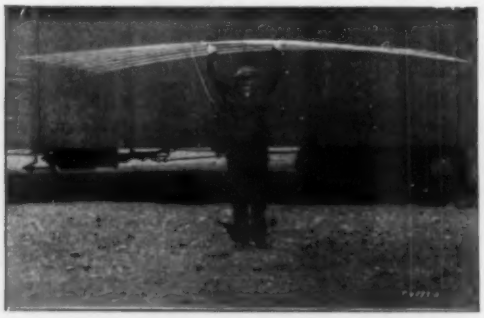
ST. LOUIS COUNTY, MINN., uses seven tractors with V-shaped plows and wings to clear the deep drifts on the highways near Duluth. Some of the drifts which this equipment had to fight this winter were 7 feet or more in depth. With the wings in place, one tractor cleared a highway of snow to a width of 14 feet, and with wings raised, to a width of 9 feet.

The tractors used are McCormick-Deering industrial tractors, which have great power and with proper plow equipment are effective in clearing snow from highways even where it has piled up in deep drifts. Equipped with crawler tracks, and with the enclosed cab heated by means of exhaust gases, these trucks are ready to tackle the difficult snow-fighting jobs even when the temperature is very low. During the summer they are used for road maintenance.

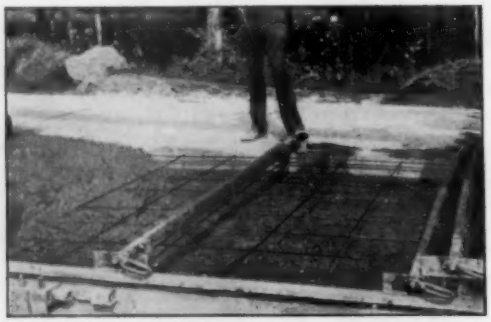
By this modern use of equipment, more than 117,000 miles of road, which represents nearly 50 per cent of the main arteries of vehicular travel in the 36 snow states, are being kept open and free from snow this winter. Last winter, 106,721 miles were cleared of snow in these states, according to the American Automobile Association.

A McCORMICK-DEERING TRACTOR AND PLOW BREAKING OPEN ROADS IN MINNESOTA

A new type of steel reinforcement for highways



Electrically welded Barmat 8 ft. 8 in. by 14 ft. long. Note remarkable stiffness and ease of handling



Showing accurate placement of welded Barmat by means of Havemeyer removable installing devices

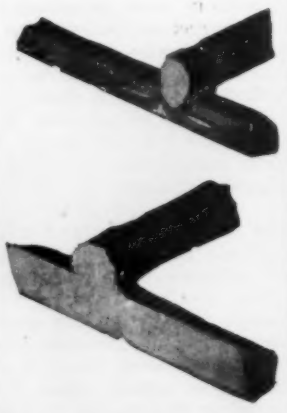
Electrically welded Havemeyer Barmat displaces ordinary hand assembled mat; delivered complete, costs less to handle and install.

THE announcement of an **electrically welded Barmat** of Havemeyer deformed bars, delivered on the job complete, brings immediately to mind a list of very plainly seen advantages: greater strength, more rigidity, no tedious hand assembly on the job, easier handling, faster installation.

The advantages are obvious. What about possible difficulties? They have been taken care of fully. There is a truly remarkable flexibility of design, without affecting cost to any notable extent. Barmats are so stiff they ship and handle easily. Practically any sizes are possible, up to eleven feet by twenty feet, although we recommend nine feet eight inches by fourteen feet as a maximum. As to weight, Barmats may vary from 30 pounds to 90 pounds per 100 square feet. Three-eighths-inch-round deformed bars are recommended, but other sizes may be used alone or in combination.

Havemeyer Barmats simplify the entire problem of highway reinforcing. We anticipate that they will become standard under even difficult conditions.

A catalog on this remarkable new product will be gladly sent without obligation. Write for a copy today.



Detail of Weld used in Barmats and section through weld

Concrete Steel Company

42 BROADWAY, NEW YORK

BRANCHES IN PRINCIPAL CITIES

PERRY A. FELLOWS
City Engineer, Detroit
(Appointed 1925)

CHARLES W. DARLING
City Engineer, Grand Rapids
(Appointed 1927)

H. C. THOMPSON
City Engineer, Bay City
(Appointed 1906)

JAMES R. POLLOCK
City Engineer, Pontiac
(Appointed 1925)

BARTON W. BODELL
City Engineer, Battle Creek
(Appointed 1926)

WHO'S WHO AMONG CITY ENGINEERS

Installment No. 1 — Portraits of City Engineers in Fourteen Cities of Michigan

DAVID DOWS WORCESTER
City Engineer, Port Huron
(Appointed 1926)

GEORGE H. SANDENBURGH
City Engineer, Ann Arbor
(Appointed 1918)

VICTOR NEUMAN
City Engineer, Monroe
(Appointed 1926)

WALTER E. FRAZIER
City Engineer, Adrian
(Appointed 1921)

PRESCOTT G. BROWN
City Engineer, River Rouge
(Appointed 1919)

ROBERT H. ERLEY
City Engineer, Dearborn
(Appointed 1924)

VERNON N. TAGGETT
City Engineer, Niles
(Appointed 1921)

DELOSSE E. BICKNELL
Supt. of Public Works, Saint Joseph
(Appointed 1927)

KARL B. ROBERTSON
City Engineer, Midland
(Appointed 1927)

How do you know
your water storage is adequate?

Are you satisfied with the capacity of your present system?

Are you planning improvements that will include new storage facilities?

IT is not unusual for a city to find on careful investigation that a water storage capacity much greater than was at first considered adequate will prove economical. Springfield, Missouri recently built the 750,000 gallon Horton Tank shown in the illustration although a tank of only 300,000-gallon capacity was first talked about. The engineers in charge showed conclusively that the added cost was more than justified by the savings effected in the cost of mains.

General practice is changing in this matter of water storage. It is not always safe to base your plans on the amount of storage in other cities of similar population. Consult a good engineer with plenty of experience in recent improvements. He can balance the various factors of cost in a complete water system and give you reliable recommendations. The chances are that the amount of storage he includes will greatly exceed your ideas. Only by securing such reliable counsel can you know that your supply is adequate.

We shall be glad to give you the experience of engineers and city executives in regard to water storage. We shall also be glad to give you any estimating data you need for studies in your own city. Address our nearest office.

Chicago Bridge & Iron Works

Chicago.....2127 Old Colony Bldg.
New York 3108 Hudson Terminal Bldg.
Cleveland.....2236 Union Trust Bldg.
Dallas..1606 Dallas Nat. Bank Bldg.
Havana, Cuba.....Apartado 2507
Atlanta.....1014 Healey Bldg.
San Francisco.....1033 Rialto Bldg.

HORTON TANKS

AO 4-Gray

Yes—we should like you to mention THE AMERICAN CITY.

A Moral Responsibility Accepted

A GREAT and progressive city, growing with speed, needed to increase its water-supply, so reached out into the neighboring country and created vast stores through the construction of big impounding reservoirs. In at least one instance this was done in spite of the protests of the population of the valley. In the early hours of the morning of March 13, 1928, the walls of the great St. Francis reservoir of the Los Angeles water-supply crumbled from some cause as yet undetermined, and hundreds of lives were snuffed out in a few moments and millions of dollars' worth of valuable agricultural land was rendered useless by being buried under many feet of sand. The endeavor of years was thus caused to vanish overnight.

The dam was designed and built under the supervision of nationally known engineers whose works have stood the tests in other places. Yet this structure, built to serve the needs of a growing city, failed and wiped out the possessions of a moderately large population. Who is responsible? Already several commissions and groups are studying the remains of the dam to try to determine the causes of the failure. This is a difficult task, as much evidence in the neighborhood of the dam was washed out at the time of the break.

Mayor George E. Cryer has come forward with a statement accepting the responsibility for the losses and thus placing Los Angeles in a most favorable light following this lamentable accident. In addressing the city officials, according to an Associated Press report, he stated, "We cannot restore the lives that have been lost. But we can and will make amends for the property damage that has been wrought." The Mayor and city officials turned down a suggestion made by the Red Cross that a national appeal be made for relief funds for the flood-torn area. The Mayor said, according to the same report, "I feel that Los Angeles is perfectly capable of handling the situation. Certainly, we can devise ways and means of providing the necessary funds." Los Angeles has accepted her responsibility."

Preparing for Higher Pressures

THE growth of the great Westchester County residential section north of New York City has been so steady that all local sources of water-supply have proved inadequate. The New Rochelle Water Co., serving this area, has purchased increased quantities of water from New York City, tapping the Catskill Aqueduct where it passes through its territory. Catskill water gives higher pressures than the local impounding reservoirs and, consequently, reducing valves have become necessary. Protective development of new residential areas and, at present, an isolated business district have necessitated installing booster pumps for certain sections. In his article in this issue, P. S. Wilson describes the system, the Pitometer survey, the use of reducing valves and booster pumps, and outlines methods so well in a few words that municipal officials will find much worth studying for future consideration.

Items and Abstracts on WATER AND SEWERAGE

Sanitary Districts in Missouri

AFTER a discouraging history, Missouri has at last passed a legislative act permitting the formation of sanitary districts for the construction of sanitary sewer systems. The bill became a law in March, 1927, and the first district to be organized includes the communities of Maywood, Mount Washington, Englewood, and Fairmount in Jackson County, in which Kansas City is located. The district will comprise about 5,000 acres and embraces a population of 10,000 or 12,000, none of whom have previously been connected with any sewer systems.

Destroy Algae or Destroy the Odor—Which?

THERE are two methods by which odors caused by algae in water may be eliminated. One is to destroy the odor, and the other is to destroy the algae which cause the odor. It is usually more practical to control the algae growth than to attempt to eliminate the odors. How tastes and odors caused by algae in water can be eliminated is described in an article by Chester Cohen, Sanitary Engineer, Texas State Health Department, in this issue of THE AMERICAN CITY. It is generally conceded that, aside from the psychological effect, algae do not directly concern the health of the water consumer. They make a supply unpalatable or otherwise objectionable, however, and other sources of water may be resorted to which might be questionable from a sanitary standpoint. The relation between algae and bacteria is not well understood, but it may play some part in determining the sanitary quality of the water-supply.

Publicity for Water-Works

HOW many successful business enterprises are there in your city that do not use various forms of advertising? Does your water-works advertise, or are you simply taking the attitude that there is no competition and, consequently, there is no use of advertising—as everybody must have water? It is a good idea to keep the public informed on improvements in your plant, how disease germs are removed from the water or killed, and at the same time to urge a freer use, not waste, of water. A clean plant with well-kept grounds is one of the best advertisements any plant can have. Just how Kirksville, Mo., has "sold" its water-works to the consumer is told in an article by Pearl D. Fife, Superintendent of Filtration, in this issue of THE AMERICAN CITY.

Statistical Information Worth Study

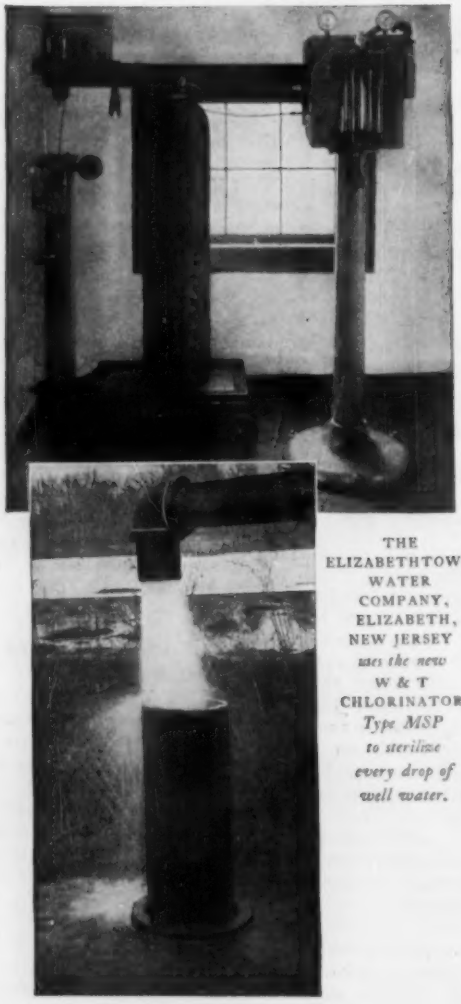
IN any well-balanced publication it is impossible to satisfy everybody by giving data to the finest detail. In THE AMERICAN CITY statistics covering engineering data, it is aimed to cover as wide a field as is commensurate with the value of the information to the reader. Notable among the statistics compiled by THE AMERICAN CITY are the water-supply statistics of American municipalities, covering 4,300 communities over 1,000 population. These have become standard. The sewerage and sewage-disposal statistics published in the 1927 *Municipal Index* furnished a similar help in that field. In the 1926 Index were statistics on the collection and disposal of garbage, ashes and rubbish. In recent issues of THE AMERICAN CITY considerable attention has been paid to the statistics of water-works through the publication of data by states. In the November and December, 1927, issues of THE AMERICAN CITY appeared statistics on the water-supplies of Maine; in November, 1927, data were published on the water-supplies of Colorado; in August water rates in Wisconsin cities were published; and in July, 1927, appeared statistics on water-supply and sewage treatment in Oregon. In this issue will be found statistics covering sewerage and sewage treatment in all municipalities in the state of New York.

Water-Waste Surveys in Rome and Fort Worth

A WATER-WASTE survey of a Roman aqueduct constructed between 313 B. C. and 50 A. D., was carefully studied by the old Roman engineers and reported in a delightful translation by Clemens Herschel. The old report calls attention to the fact that the Julian Aqueduct regained its normal quantity and held it even during notable droughts by reason of the "destruction of the branch pipes through which it was secretly despoiled." At another point it is reported: "Whatever had been unlawfully drawn by the water men or had been wasted as a result of official negligence, has been recovered; this was practically equivalent to the finding of new sources of supply, as in fact the supply was almost doubled." The report of the recent water-waste survey in Fort Worth is not unlike this in that a total saving of 915,000 gallons per day was made as a result of the survey. This volume of water, valued at even the low figure of 5 cents per 1,000 gallons, shows an annual saving of $16,000 per year. In his article appearing in this issue of THE AMERICAN CITY, Lewis A. Quigley, Superintendent of Water-Works, Fort Worth, Texas, gives an interesting report.

See Sections 9 and 12 of the 1928 Municipal Index for valuable material on Water Supply and Purification, and Sewers, Sewerage and Sewage Disposal.

All Well Waters —Should Be Chlorinated!



THE ELIZABETHTOWN WATER COMPANY, ELIZABETH, NEW JERSEY *uses the new* W & T CHLORINATOR *Type MSP to sterilize every drop of well water.*

PUBLIC HEALTH ENGINEERS are rapidly dissipating the old-fashioned but popular idea that well waters are pure and safe to drink just because they are well waters and come from under-ground sources.

They know that well waters are liable to pollution—that a fissure in the rock or a break in the well casing often permits disease ladened contamination to enter the supposedly pure water—particularly in times of flood.

They know that hundreds of Typhoid Fever Epidemics have been caused by well waters.—They know that the three outstanding typhoid epidemics in recent history—Salem, Ohio—Lansing, Michigan—Santa Anna, California—were all caused by polluted, *unchlorinated* well water.

That is why there is a marked tendency toward the chlorination of all well waters—because a properly chlorinated water cannot cause disease—because chlorination will not change the physical or chemical characteristics of the water in any way—because chlorination costing but one cent per capita per year is the cheapest public health insurance.

"The Only Safe Water is a Sterilized Water"

WALLACE & TIERNAN
COMPANY, INCORPORATED
Manufacturers of Chlorine Control Apparatus
NEWARK · NEW JERSEY

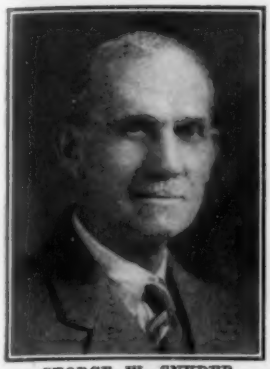
NEW YORK CHICAGO KNOXVILLE SAN FRANCISCO MINNEAPOLIS PITTSBURGH DALLAS KANSAS CITY
LOS ANGELES SEATTLE ST. LOUIS BUFFALO HARRISBURGH INDIANAPOLIS DETROIT
WALLACE & TIERNAN, LTD., TORONTO, CANADA WALLACE & TIERNAN, LTD., LONDON, ENGLAND

ALSO SEE OUR ADVERTISEMENT PAGE 20

Yes—we should like you to mention THE AMERICAN CITY.

WHO'S WHO IN WATER SUPPLY

Installment No. 4—For Previous Installments See January, February and March Issues



GEORGE W. SNYDER
Superintendent of Parks and Public Property, Reading, Pa.
(Appointed 1928)

SAMUEL F. HASSLER
Supt. of Public Safety, Harrisburg, Pa.
(Appointed 1918)

FRANK T. LAMEY
Gen. Supt., New Chester Water Co., Chester, Pa.
(Appointed 1920)

WILLIAM H. REICHARD
Supt., Water Bureau, Bethlehem, Pa.
(Appointed 1917)

EDW. D. RUTH
Supt., Lancaster Water Bureau, Lancaster, Pa.
(Appointed 1921)

W. C. HAWLEY
Chief Engr. and Gen. Supt., Pennsylvania Water Co., Wilkinsburg, Pa.
(Appointed 1902)

CHRISTIAN C. BASSIER
Supt. of Water Works, Shenandoah, Pa.
(Appointed 1916)

ARTHUR MARTIN
Supt. of Water Works, Oil City, Pa.
(Appointed 1928)

NELSON G. CLAYTON
Supt., Pottsville Water Co., Pottsville, Pa.
(Appointed 1912)

EDWARD C. TAGGART
Supt., Water Department, Ambridge, Pa.
(Appointed 1921)

J. C. TURNER
Supt. of Water and Streets, Juniata, Pa.
(Appointed 1913)

H. E. FRANKENFIELD
Supt. of Water and Streets, East Stroudsburg, Pa.
(Appointed 1924)

Photograph by Bachrach
CALEB MILLS SAVILLE
Chief Engr., Board of Water Commissioners, Hartford, Conn.
(Appointed 1912)

G. ALLEN SCHAEFER
Supt. of Public Works and Water Works, Middletown, Conn.
(Appointed 1925)

in { a large park / a large school / a large residence / a large tenement / a large home / a large camp / a large city } *or a small one*

Any place-large or small-
where people gather or live-

PLAYGROUND **EverWear** APPARATUS
(STANDARD SIZE AND STANDARD FOR QUALITY SINCE 1907)
&
PLAYGROUND **EverWear Junior** APPARATUS
(SMALL IN SIZE. A NEW 1928 LINE OF EVERWEAR EQUIPMENT)

Write for Catalog No. 20 or No. 20-A, the latter for "Junior" outfits

The Everwear Manufacturing Co.
SPRINGFIELD OHIO

Yes—we should like you to mention THE AMERICAN CITY.

Items and Abstracts for PARK AND PLAYGROUND DEPARTMENTS

A Notable Event in Municipal Music

THIRTY-FIVE hundred people recently attended an impressive production of Handel's oratorio, "The Messiah,' presented in the Memorial Auditorium at Sacramento, Calif., under auspices of the Musical Division of the municipal Recreation Department. George Sim, Superintendent of Recreation, announced in connection with the production that it was not offered as an exhibition nor an entertainment, but as a sincere and dignified effort in community music. And thus it made itself felt when on the night of the performance the lights went out all over the great auditorium, and a huge cross at the rear of the stage was slowly illuminated, revealing the massed musicians. There were almost 400 of these, including the Chorus and the Municipal Symphony Orchestra.

The costuming of the singers, the women wearing white caps and gowns, and the men black, gave a pageant-like effect to the scene, which was further enhanced by the character and the soft quality of the illumination, and by the seating in cross formation down the middle section of the auditorium, of the Sacramento Knights Templars in full uniform. The auditorium, because of the simplicity of its architecture and the soft harmony of its colorings, afforded an appropriate setting for the production.

This beautiful presentation completely fulfilled the Musical Division's slogan, "Good Music for the Masses," with Franz Dicks, conductor; Stewart W. Tulley, chorus director; and with members of the city's outstanding musical clubs participating. The community chorus has 250 trained voices, and there are 75 instruments in the Municipal Symphony Orchestra.

Miniature Aircraft Contests on Local Playgrounds Will Prepare for Second National Tournament

THE second national playground miniature aircraft tournament, under the auspices of the Playground and Recreation Association of America, will be held in Atlantic City, October 5 and 6, in connection with the Fifteenth National Recreation Congress. The purpose of the contest is to provide an enjoyable handcraft activity and to educate boys and girls in the principles of building and flying airplanes.

Preliminary to the finals at Atlantic City, local contests will be held on playgrounds throughout the country. According to the rules of the tournament, these local competitions are to be conducted under a committee which shall include, among others, the president or vice-president of the chamber of commerce; the superintendent of recreation or the playground director; newspaper editors; and the president or vice-president of the local aeronautic society, flying field or airport. Any person under twenty-one is eligible to the competition. All planes must be built and operated by the contestants. The rules provide for ten junior and senior outdoor and indoor events for model and power-driven planes. In most events rubber motors are specified. Launching by hand, rising off the ground, and rising off water are some of the tests to which the tiny aircraft will be subjected.

Contestants who make the five best records in the country in each of the ten events will be eligible to compete in the finals at Atlantic City. Awards of medals and cups will be made to national winners by the magazine *Popular Aviation*.

Twenty thousand boys and girls entered the preliminary competitions last year, and it seems likely that there will be more this year. The same national committee will serve again, with the addition of one new member, Henry Ford. Orville Wright and Colonel Charles A. Lindbergh are the co-chairmen. Other members of the committee are Commander Richard E. Byrd, Porter Adams, President of the National Aeronautical Association; F. Trubee Davidson, Assistant Secretary for Aeronautics, War Department; Harry F. Guggenheim, President of the Daniel Guggenheim Fund for the Promotion of Aeronautics; Clifford B. Harmon, President, International League of Aviators; Joseph Lee, President, Playground and Recreation Association of America; William P. MacCracken, Jr., Assistant Secretary of Aeronautics, Department of Commerce; Colonel Theodore Roosevelt, and Edward P. Warner, assistant Secretary of Aeronatics, Navy Department.

Full particulars concerning the tournament will be supplied by the Playground and Recreation Association of America, 315 Fourth Avenue, New York.

Golf for Small Towns by Bond Issue or Philanthropy

THERE are thousands of public golf courses in the country, and ample opportunity for the successful development of thousands more, according to incidental facts stated in "A Manufacturer Looks at Golf," the feature article in *Golfdom*, for February, 1928. Smaller towns, taken as a whole, have as yet comparatively few courses, though the interest is alive there, as elsewhere. Nearly always, this manufacturer states, there are idle acreages near the towns, which are waiting to be turned into links. The towns themselves are able to finance the construction of courses by bond issue. The bankers and real estate men are alive to the possibilities of golf-course development for the enhancement of surrounding property, and make good allies to the cause. And there are philanthropically inclined residents in many places, who are able and—if they become interested, would perhaps be willing—to donate ground, or even a completed golf course where the community itself does not feel able to do so.

Backyard Playgrounds East and West

IN the stimulation of interest in play, even children of pre-school age who are too small to go alone to the public playgrounds are receiving increasing consideration from municipal and civic bodies. The second annual backyard contest now being promoted by the City Planning Association in Buffalo (see page 141) represents one of the ways of municipal concern for the small child's play. The movement on the Pacific Coast is exemplified by the Los Angeles Parks and Playgrounds Association's Home Bureau of Play,* and by the instructions issued by the Recreation Association for home ground layouts, including plans, with sketches and specifications for homemade equipment. Now, no Oakland garage in a family with children is considered to be functioning completely unless its drive is hard-surfaced as a lane for scooters, skates, tricycles, and wagons, its rear wall equipped with a basketball goal, and its side wall as the backstop of a handball court. In St. Louis, the Park and Playgrounds Association last year held a home playground contest in which there were 500 entries. The prize was awarded to Louis Pahl, a 13-year-old boy, whose backyard had been improved at a cost of $3. Representative of the ingeniously devised equipment of all sorts which this prize-winning yard boasts is the clubhouse. In size it is 6 x 6 x 5 feet with a roof of asbestos shingles, and two small windows. It has a concrete foundation, and set-in brick doorsteps. The sides are weatherboarded, and are being covered with tar paper as it can be "found." The flagpole is a piece of pipe from a waste heap.

The general aims of backyard playgrounds are: to provide play places that are safe and near home; to encourage participation by parents in juvenile good times; to discourage play on the streets. There is an additional value in boy-made playgrounds such as the St. Louis prize-winner in that they provide an incentive to certain creative and experimental enterprises on the part of the youngsters which are of the essence of recreation of the highest order.

The Pacific Coast cities mentioned issue pamphlets illustrating the equipment of home playgrounds. The Children's Bureau, Washington, has a 5-cent leaflet on the subject, and there is a chapter on the subject in "The Organization and Administration of Playgrounds and Recreation," by Jay B. Nash (reviewed in THE AMERICAN CITY, October, 1927, p. 553).

See THE AMERICAN CITY, January, 1928, p. 163.

VOTING MACHINES

For

Speed — Accuracy — Economy

THE marked superiority of the voting machine over the old paper ballot has led progressive officials in more than 1,800 cities, towns and villages to adopt this modern method of voting. New York City uses 3,000 machines. Over 5,000,000 voters will cast their ballots on voting machines in the Presidential election next November.

Write today for illustrated pamphlets

Automatic Registering Machine Co., Inc.

Jamestown New York

Yes—we should like you to mention THE AMERICAN CITY.

Items and Abstracts for FINANCE AND LEGAL DEPARTMENTS

Interest on City Bank Deposits

THE amount of a city's funds on deposit in banks is sometimes very large, particularly during the months following tax collections. Good administration and the public interest demand that the city shall receive a fair rate of interest on these funds. This point is emphasized in a recent report, No. 64, of the Municipal Information Bureau at the University of Wisconsin, wherein are summarized the rates of interest received on bank deposits by 39 Wisconsin cities with population of 5,000 or more. Three of these cities received 3 per cent, 12 received 2½ per cent, one received 2¼ per cent, 12 received 2 per cent, 2 received 1¾ per cent, and 5 received only 1½ per cent. Four years previously the Bureau had made a similar inquiry, which showed slightly higher rates received by the cities. In eleven cities the interest rate has been reduced, while in only one has it increased.

The City and the Gasoline Tax

FORTY-SIX states and the District of Columbia are utilizing the tax on gasoline as a supplement to other sources of state revenue, and particularly, of course, as a means of satisfying the insatiable demand for highways. Starting at one cent a gallon in Oregon in 1919, there has been a steady increase, the rate now ranging from two cents in one-third of the states to five cents in a few. A study of the tax has recently been made by Prof. F. G. Crawford of Syracuse University, the results of which appear in a booklet of the Municipal Administration Service entitled "The Administration of the Gasoline Tax in the United States."

In 24 states the proceeds of the tax go entirely to the state for highway purposes. In 20 states some portion is distributed to local communities—usually to counties only. In only four states—Indiana, Kansas, Michigan and Ohio—is there a direct distribution of the state tax to cities, although the argument has been raised that certain streets of every city are part of the state highway system, but the state does not help finance them; the opposing argument being that the cities derive enough benefit from the highways to justify their expenditures.* In a few cities a tax of ½ or 1 cent is collected in addition to the state tax, to go toward the cost of additional maintenance and reconstruction caused by traffic that does not benefit the adjoining property. As to this practice Professor Crawford says:

"This form of the gasoline tax lacks virtue. Collected in addition to a state tax, it has the tendency to make the state tax unpopular. It creates a ring of gas stations around the city where gasoline is cheaper. A better system would be to grant more subsidies or divert a portion of the gasoline tax proceeds directly to the cities."

*Of interest in this connection is the following paragraph from a paper on "Highways in Terms of Transportation," delivered by J. Gordon McKay, Chief of the Division of Highway Economics of the U. S. Bureau of Public Roads, at the 1928 Purdue Road School:

"The several surveys completed by the Bureau of Public Roads clearly show that the traffic using our state highway systems is predominantly city-owned passenger-car and motor-truck traffic, farm-owned motor vehicles comprising only a small part of the total traffic. In Ohio in 1925, farm-owned passenger cars and motor trucks made up only 12.4 and 15.5 per cent respectively of the total traffic. In Vermont during 1926, farm-owned passenger cars comprised one-tenth and city-owned passenger cars nine-tenths of the total passenger-car traffic on the State Aid system."

The Municipal Bond Market

New York's New "Legal Investment" Law Will Aid Municipal Borrowing

By SANDERS SHANKS, JR.
EDITOR, *The Bond Buyer*

FOR hundreds of cities, counties and school districts scattered throughout the country, the most important recent development affecting the municipal bond market was the passage by the New York Legislature of a measure completely revising that section of the banking law which regulates the investment operations of savings banks and trust funds. This bill was approved by Governor Smith on March 21, and takes effect immediately.

For a number of years, savings bank executives, municipal bond lawyers, bond dealers and publishers of financial journals devoted to the bond market have been making a more or less concerted effort to secure legislation which would extend the list of "legal investments." A year ago the Legislature appointed a joint investigating committee to study the subject, and on February 15 of this year that committee filed a report completely endorsing a program of legislation prepared by the State Savings Banks Association. Four bills were introduced, three of which extend the list of legal investments to embrace new classes of securities (viz., public utility bonds, railroad equipment trust and terminal securities and promissory notes secured by legal bonds), while the other revises the existing law in such manner as to greatly broaden the field of investment in municipal issues.

Under the old law the only municipal bonds which could qualify as legal investments for New York savings banks and trust funds were those issued by cities having a population of 45,000 and a net debt not in excess of 7 per cent of the valuation of taxable property. The only exception to this is that in states adjoining New York there is no population restriction, and bonds of counties and small places are eligible.

The new law reduces the population requirement to 30,000, substitutes a debt limit of 12 per cent of valuation of real property for 7 per cent of all taxable property and legalizes bonds of school districts and counties which are coterminous with or which include a city which meets the requirements of the law. A further important change is the elimination of the debt limit entirely in the case of any city having a population of 150,000, assessed valuation of real property of $200,000,000 and unlimited power of taxation to pay its bonded debts.

The phrase "legal investment for savings banks and trust funds in New York" used in describing an issue of bonds, is understood by investors everywhere to denote the very highest possible quality. To permit hundreds of additional borrowing communities to qualify in the eastern "legal" market is a development of the greatest importance.

The following table of representative issues indicates the trend of the market:

Amount	Municipality	Rate %	Maturity	Net Yield %
$22,500,000	New York State	3½, 3¾ & 4	1-50	3.6923
3,000	Gibson Co., Ind	4½	5 5/6 Yr. Avg.	3.71
50,000	La Porte Co., Ind	4½	6 Yr. Avg.	3.80
1,500,000	Monroe Co., N. Y	3¾ & 4	24 Yr. Avg.	3.822
7,500,000	Philadelphia, Pa.	4	20-30 Yr. Opt.	3.86
52,000,000	New York, N. Y	4	3 5/6 Yr. Avg.	3.860
70,000	Burlington, Vt.	4	14-20 Yr. Ser.	3.89
125,000	Pittsburgh, Pa.	4¼	1-10 Yr. Ser.	3.89
400,000	Jefferson Co., Pa	4	6 1/3 Yr. Avg.	3.90
600,000	Salt Lake City, Utah	4	11-20 Yr. Ser.	3.91
500,000	West Hartford, Conn	5	1-25 Yr. Ser.	3.92
100,000	Toledo, Ohio	4¼	10 5/6	3.98
25,000	Rome, N. Y	4	2 5/6	3.99
800,000	King Co., Wash., Sch. Dist. No. 1	4	13½ Yr. Avg.	4.09
60,000	Menominee, Mich.	4¼	11½ Yr. Avg.	4.16
444,000	Chattanooga, Tenn.	4½	11 5/6 Yr. Avg. & 30 Yr.	4.17
162,000	Allendale, N. J., Sch. Dist	4½	21¾ Yr. Avg.	4.34

By Cleanliness the Race has Grown

The regal magnificence of the court of Louis XIV overshadowed in splendor's display even the pomp of imperial Rome . . . But it shone as a jewel in a barnyard's muck! For radiating from it were the streets of the poor—abominations in slop and dirt—incubators of epidemic disease.

Step by step cities have advanced since then. Phase by phase the public health has been improved. In the van of the march have been the great crusaders for hygiene and sanitation.

And to 20th century sanitation Bartlett-Snow contribute the Sterling Destructor for waste disposal. A Sterling Destructor consumes garbage and refuse by fire. The products of its furnaces are sterile, odorless gases and a little ash. It cannot give offense.

Read about it in our interesting Sterling Destructor booklet.

THE C. O. BARTLETT & SNOW CO.
6220 Harvard Ave. Cleveland, Ohio

Bartlett - Snow

Refuse Disposal Plants

Items and Abstracts for CIVIC AND COMMERCIAL ORGANIZATIONS

Recreation: An Industrial Asset

THE industrial survey is a form of community publicity of comparatively recent origin. Its function is to present all facts bearing upon the city or district as an industrial location. In the ideal, it is an economic appraisal which deals also with physical, financial, governmental and other conditions influencing the business, industry, and well-being of the community. In actual practice, some industrial surveys are concentrated chiefly upon business facts and figures, others constitute themselves glowing, "booster" propaganda, and still others, nearer the ideal, give a fair all-round representation of the city's possibilities on the human welfare side as well as the side having to do with business welfare. The recently issued industrial survey of the city of Rutland, Vt., is of the latter classification, a concise, detailed statement of amusement and recreational facilities being listed among its assets, with facts concerning them. Such a report shows the tendency on the part of established industrial cities towards the same sort of humanization of industry now strikingly observable in certain new industrial towns.

Effective City Planning Requires Intelligent Long-Term Financing

THE fact that a carefully considered plan for the physical development of a city over a period of years requires eqally intelligent consideration of the methods of paying for the proposed improvements, is recognized in the Standard City Planning Enabling Act, prepared by the Advisory Committee on City Planning of the U. S. Department of Commerce. In explaining its recommendations of the grant of advisory power in this matter to city planning commissions, the committee says:

"This is one of the most important functions of planning commissions. Practically all municipalities carefully budget their annual appropriations from current funds for current operating purposes. Much of the waste in municipal public affairs, however, has come from the failure to budget or program the expenditure of bonds or capital funds. In the case of the budget of current funds for current operating expenses, the original preparation of the budget, that is, its tentative form for submission to council, falls usually and appropriately within the function of the administration, that is, the mayors or heads of the administrative departments. A bond budget or program of major improvements, however, should, by virtue of its nature, cover not one year but many years in the future, preferably ten years. The city administration is elected or appointed for a short period and is occupied with immediate and pressing questions. The original or tentative preparation of a bond budget or improvement program should be made by a body less temporary in its nature and less subject to current and urgent pressures. The planning commission appears to be the appropriate body to make the first or tentative draft of the improvement program. It is the body best fitted to adjust such a program to the city plan. As from year to year council authorizes bond issues and the construction of major improvements, council will not be bound by such a program, but such a program is an essential part of any economical fiscal system, and the planning commission, for the above reasons, would seem to be the appropriate body to prepare it."

"More Flowers for Hometown"

AN excellent suggestion from *Nacos News*, the official publication of the National Association of Commercial Organization Secretaries:

"Purchase several pounds of flower seed, selecting a variety, preferably a perennial, that will do well in your climate. Place the seed in packets, enough in each to plant a small flower-bed. On the front of the packets print, 'Distributed by the Chamber of Commerce in the interest of making Hometown the flower city of our state.'

"On the reverse side give planting instructions, together with a list of flowers that may be planted at the same season of the year. Your local seed houses will supply such a list. Mention also that more of the variety of seed contained in the packet may be obtained from any of Hometown's seed stores, mentioning incidentally that other products, as well as seeds, can be bought more advantageously at home than in some other city.

"Distribute the seed packets to school children to take home to plant. Secure the cooperation of the teachers in getting over the Chamber of Commerce message of *More Flowers for Hometown.*"

Growth of the Community Trust Idea

DESCRIBING community trust procedure as the most carefully devised mechanism that has yet been fashioned for the administration of permanent funds for charitable and educational objects, Ralph Hayes, Vice-President of the Chatham Phenix National Bank and Trust Co. of New York, and Director of The New York Community Trust, in a recent talk before the Corporate Fiduciaries Association of New Haven, at Yale College, gave some interesting figures as to funds which are being distributed and administered by community trusts:

"In so far as I am aware, no compilation has been published heretofore showing the principal held and the income distributed by the various community trusts. During the past few weeks we have communicated with nearly all of these organizations now functioning, and while we cannot say that our information is complete, such calculation as we are able to make indicates that in 1925, 16 community trusts had begun distribution and the amount distributed was $441,856; that in 1926 the number of distributing trusts had increased to 18 and the sum disbursed had grown to a total of $492,429; that in 1927, the distributing trusts numbered 19, and their appropriations had gained another $100,000 and reached $593,036. Now, at the beginning of 1928, the community trusts with funds actually in hand are 30 in number. They are scattered through 20 states. They have upward of 175 banks and trust companies acting as their trustees. They are administering funds that have risen, in the aggregate, to something more than $14,500,000."

Describing the method whereby a community trust avoids the rigid and inflexible definitions of purpose that have wrecked so many charitable trusts, the speaker said:

"The objects for which the Distribution Committee Trust may instruct the trustee to pay out income from any fund must be those precise purposes which are described by the founder of that fund in the will or deed of trust creating it, coupled, however, in every instance, with the concurrent provision that if, in future circumstances, it should become apparent to the Committee that a literal execution of the original term is impossible or impracticable, then the Committee is instructed and directed by the founder to make such amendments as are calculated to preserve the fund from obsolescence."

Dignifying Newly Naturalized Citizens

ON February 24, at the Y. M. C. A. in Orange, N. J., 308 recently naturalized citizens were given an official welcome by the Governor of the state, A. Harry Moore. The Chamber of Commerce of the Oranges and Maplewood participated in the welcome. Russell Colgate, one of the members of the Chamber of Commerce, presided at the meeting and introduced the Governor. The arrangements were in charge of Harry Hasselbauer, another member of the Chamber of Commerce, who had charge of the Americanization Committee of the Y. M. C. A., which materially assisted many of the new citizens in attaining the grasp of civic knowledge necessary to their qualification.

The Forward Steps

recorded on pages 140 to 149 of this issue contain numerous items of interest to civic and commercial organizations. See also "Membership Councils—A New Development in Chamber of Commerce Organization" (page 150), and "The Veterans' List" (page 151). The items under "Municipal Advertising" in the Index to Contents are of special interest.

FLASH! FLASH! FLASH!

Sixty times a minute a bright, piercing light—always working —always dependable—

because the W & T Dry Battery Flasher is equipped with an automatic lamp changer. If a bulb burns out, another bulb automatically takes its place.

Can't we send you more information about this dependable warning signal which is being endorsed by scores of outstanding traffic experts?

Write for
TECHNICAL PUBLICATION No. 86

Also see our advertisement on Page 12

WALLACE & TIERNAN
COMPANY, INCORPORATED
Manufacturers of Chlorine Control Apparatus
NEWARK • NEW JERSEY

NEW YORK CHICAGO KNOXVILLE SAN FRANCISCO MINNEAPOLIS PITTSBURGH DALLAS KANSAS CITY
LOS ANGELES SEATTLE ST. LOUIS BUFFALO HARRISBURGH INDIANAPOLIS DETROIT
WALLACE & TIERNAN, LTD., TORONTO, CANADA WALLACE & TIERNAN, LTD., LONDON, ENGLAND

Items and Abstracts for DEPARTMENTS of PUBLIC SAFETY

A Notable Fire Prevention Record

THE fire losses of Augusta, Ga., for 1927 were the lowest in ten years—among the lowest of any city in the South. This reduction, says *Safeguarding America Against Fire*, was made in the face of almost insurmountable obstacles, and was due largely to the effects of Henry M. North, Chairman of the Fire Prevention Committee of the Augusta Board of Fire Underwriters, and Fire Chief John B. Kennedy. In cooperation with city officials, insurance men and the public, these gentlemen quietly promoted a campaign for the removal of buildings which would prove a menace in case of fire, and in this work Chief Kennedy was no respecter of persons. During the year more than 5,000 hazards were eliminated, the personnel of the fire department was brought to a high standard of efficiency, and equipment was purchased of a type needed by a city the size of Augusta. Effort was also made to induce the public to cooperate with the fire department in preventing fires.

The example set by Augusta is one which The National Board of Fire Underwriters believes might well be emulated by all cities in the United States. Inspections made by members of fire departments are the greatest aids in curtailing of fire losses. Once located, the worst hazards can be removed if sufficient pressure is brought to bear. Inspections should go hand in hand with the purchase of adequate fire apparatus to make cities more safe from fires. Then the national fire waste will be reduced.

Police Training Facilities

A MEETING was held in Albany on February 16 under the auspices of the New York State Conference of Mayors and other Municipal Officials to discuss police training problems.

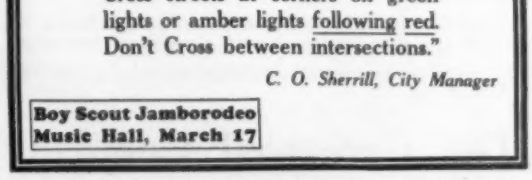
A survey made by the persons attending the conference shows that municipal police training schools are now being operated in Buffalo, Syracuse, Schenectady, Troy and New York City, and that, during the present year, new schools will be established in Rochester and Utica. It also shows that these schools will have facilities to train recruits and patrolmen of two years, or less service for all of the other cities and first-class villages in the state. The Conference arranged for the preparation of a report to be sent to all municipalities in the state, showing the existing facilities and the methods of training.

A Model County Highway with Distinct Traffic Lanes

THE Board of Supervisors of Westchester County, New York, in cooperation with the city of White Plains, undertook last year the improvement of a portion of Westchester Avenue, constituting part of the main cross-country thoroughfare from White Plains to Port Chester. This highway had been originally developed by the state in 1913, the pavement consisting of waterbound macadam 16 feet wide at an approximate cost of $7,500 per mile. The improvement is described as follows in the February 16 Bulletin of the Westchester County Planning Federation by County Engineer Charles MacDonald, who completed the project during the working season of 1927:

"Under official designation as County Road No. 62, a contract was awarded in the spring of 1927 by the County Board of Supervisors to widen and improve a portion 1.64 miles in length. The 40-foot-wide pavement consists of four 10-foot-wide strips of heavily reinforced concrete, 8 inches in thickness. The alignment has been rectified to eliminate short-radius curves, and grades have been made as easy as possible. Wide earth shoulders, nearly a mile of protective fencing, elevation of the curves, and proper warning signs at points of real danger, have produced one of the best highways in the county.

"Of particular interest, however, in the expedition of traffic, and a comparatively recent development, has been the marking of the traffic lanes. At each of the three longitudinal joints between the adjacent 10-foot strips, a broad band of black has been painted on the pavement to define the lanes for traffic, for the full length of the contract. This is to discourage the "middle of the road" driver who on other roads congests traffic and makes ineffective the wider pavements which have been placed to accommodate several lines of moving traffic. With signs erected at intervals of about 2,000 feet bearing the legend 'Drive to the Right,' it is hoped to educate the motorist to keep to the side of the pavement and thereby permit faster traffic to pass by."


Help Save Your Own Life
Disaster! 68 Pedestrians killed and 884 Pedestrians injured in Cincinnati in 1927.
"Cross streets at corners on green lights or amber lights following red. Don't Cross between intersections."
C. O. Sherrill, City Manager
Boy Scout Jamborodeo
Music Hall, March 17

THE ABOVE POSTER IS CARRIED ON THE REAR END OF CINCINNATI STREET CARS IN CONNECTION WITH A CONTINUOUS CAMPAIGN WHICH THE CITY ADMINISTRATION AND THE PUBLIC ARE CONDUCTING FOR GREATER TRAFFIC SAFETY

Quick Intercommunication for Police Departments

THE efficiency of the new printer-telegraph system installed by the Boston Police Department was shown when a man who gave his name as James Murphy was placed under arrest. After finger-prints had been taken, the man was identified as James McGlone and this information was sent out to all stations by the machine. In a few minutes reports came in from three stations stating that the man was wanted for violation of parole, larceny of an automobile, and for operating a motor vehicle while under the influence of liquor.

Polite Reminders of Prohibited Parking

POLITENESS on the part of the police department in dealing with minor motor-code offenses is urged in a letter recently written to the *Evening Press* of Asbury Park, N. J., by a local merchant, Charles M. Baker. Mr. Baker expresses his ideals for the "friendly city" rather than the one which enforces the letter of the law where violations are unintentional and inconsequential. He is convinced that the often summarily delivered "Tell it to the judge" injunction might be replaced by a more telling "We are sure you did not know" explanation, since (in his experience) few licensed drivers deliberately violate the law.

Mr. Baker suggests that a police ticket for wrong parking be worded something like this:

> COURTESY NOTICE
>
> You have parked your car in a prohibited space and we believe this violation to have been unintentional. Kindly accept this courtesy notice as a suggestion not to repeat the offense.
>
> Police Department
> of Asbury Park
> THE FRIENDLY CITY

"This is a resort community," Mr. Baker continues, "visited by motorists from various states. So long as motor regulations are not uniform throughout the country one can hardly be expected to know what is required in every hamlet and town. . . .

"Have a little faith in human nature. Realize that a violation may be the result of ignorance rather than intention. Let a city get the reputation of being too keen on automobile arrests and it will soon be given a wide berth by the traveling public."

The World's Gold Standard in Fire Alarm & Police Signalling Systems

Wherever you travel the world over—from historic Windsor Castle, England, to Cape Town, South Africa—you will find Gamewell fire alarm and police signaling systems protecting life and property.

During the past half century Gamewell Systems have found their way into the leading municipalities and industrials of the world. More than 95 per cent. of all the municipal fire alarm and police signal systems in this country can be identified by the Gamewell "Hand of Lightning."

Leading industrials such as General Electric, Westinghouse, Ford, Edison, Victor Talking Machine, Philadelphia Electric and scores of others employing the cream of the world's engineering skill, selected Gamewell systems.

National and state property including Navy Yards, Army Barracks, Government Buildings and Veterans' and State Hospitals are also equipped with Gamewell Systems.

That is why you will always find Gamewell Systems referred to as "The World's Gold Standard Fire Alarm and Police Signaling."

The Gamewell Company

Newton Upper Falls, Mass.

"A Box A Block"

Yes—we should like you to mention THE AMERICAN CITY.

Vol. XXXVIII
No. 4

443 Fourth Avenue
New York

The American City

APRIL
1928

50 Cents
$4 a Year

Pittsburgh to Install Flexible Progressive Traffic Control Signal System Covering 100 Downtown Intersections

By BURTON W. MARSH
Traffic Engineer, City of Pittsburgh, Pa.

ON February 8, 1928, the Council of the city of Pittsburgh enacted an ordinance for a bond issue of $125,000 for a traffic control signal system to cover practically the entire central business district, often called Pittsburgh's "Golden Triangle." The ordinance was promptly signed by the Mayor, and on March 6 the bonds were sold.

The system is to be a flexible progressive traffic control ("stop-and-go") signal system and is to provide for progressive movement through approximately one hundred intersections.

The city's decision to install the system was based on the recommendations of its Better Traffic Committee, which studied the subject exhaustively in a comprehensive street traffic survey.

Restricting its intensive study to the central business district, the committee prepared its survey program as a thorough engineering study of all factors relating to a downtown traffic signal system—seeking answers to the following questions:

1. *Feasibility.*—Would any traffic control system "work" successfully in Pittsburgh's complicated downtown district with its many narrow streets, its few outlet arteries, its poorly coordinated street system, its acute-angled intersections and numerous close intersection-groups, its many short blocks with little reservoir capacity? (See accompanying map, Fig. 1.)

2. *Improvement of Traffic Conditions.*—Even if feasible, would a mechanical signal system improve vehicular and pedestrian traffic flow, reduce accidents, and reduce conflicts and "confusion" to a worth-while extent?

3. *Economic Justification.*—If the answers to the above questions were favorable, would the cost of the system be warranted, comparing it to the exclusively manual control now in effect?

Survey Organization and Studies

John M. Rice, consulting engineer, was Chairman of the Special Survey Sub-Committee. As rapidly as possible, the survey staff was organized. With the writer as director of the survey staff was associated, as technical advisor, Prof. L. W. McIntyre, of the University of Pittsburgh, who also took immediate charge of many of the studies. The remainder of the survey staff consisted of a supervisor, an office engineer, a field party chief, two statisticians, draftsmen, and a varying number of field observers.

The City Bureau of Traffic Planning, aided by 700 Boy Scouts and others, carried out several important basic studies before the separate survey staff began its work.

One chapter of the survey report deals with the underlying reasons for the downtown traffic problem, and also shows certain important traffic trends.

Business concentration as an underlying cause is emphasized by the fact that there is now a $100,000,000 building program under way in the "Golden Triangle."

Studies bring out the retarding effect of horse-drawn vehicles on other traffic on the narrow streets, a horse's walking speed during the evening peak period being but 3.2 miles per hour, and his running speed but 4.2 miles per hour. Street cars in the same period average 6.7 miles per hour between stops, and motor vehicles average 10.4 miles per hour. During the afternoon peak period, the average number of horse-drawn vehicles counted per street was generally less than 15 per hour. An interesting trend is shown in the number of horse-drawn vehicles registered in the city—there having been a steady drop from

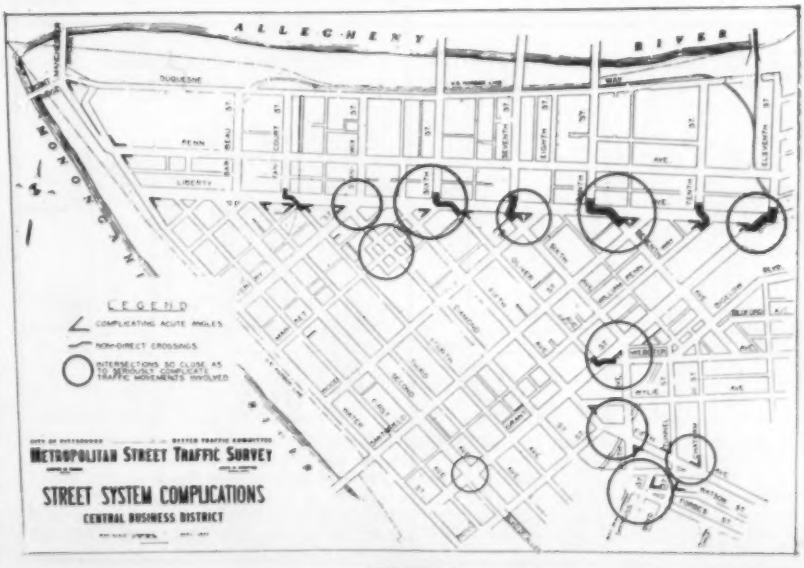


FIGURE 1

approximately 7,000 in 1917 to about 2,500 in 1927. The slow, horse-drawn vehicle problem is a constantly decreasing one.

A study of block lengths showed that about two-thirds of the number of downtown blocks are less than 300 feet in length. There are only 21 blocks over 500 feet long. Short blocks mean small reservoir capacity, and complicate signal system design.

Street Use

In Chapter III the subject of street use in the downtown district is covered in great detail. A few high-lights may be of general interest.

The Pittsburgh survey bears out several other recent surveys as to modes of transportation used by people entering and leaving the central business district. Nearly 15 per cent walk to and from the district. Of those who are transported on the streets, practically 70 per cent use street cars, though the number of street cars represents only 12.2 per cent of the passenger-carrying vehicles on the streets. The passenger automobile carries but 29.2 per cent of the people transported on the streets, although it constitutes 87.1 per cent of the passenger-carrying vehicles on the streets. Concentration certainly requires mass transportation.

It is also interesting to note that commercial vehicles constitute nearly one-quarter of the downtown vehicular traffic.

Several different studies of pedestrian traffic were made—the number of seconds required to cross the roadway, number crossing against the signal, volume counts, etc. At the intersection of Fifth Avenue and Smithfield Street, there were 105,917 pedestrian crossings between 8 A. M. and 6 P. M. on one average day.

Considerable study was given to the lane use of streets, the relative use of the curb lane on no-parking streets, times required for turns classified according to lanes, delays and interferences caused by left turns, etc.

Many other studies were made to secure data directly concerning the question of the traffic signal system. Among these were: a study of time required for vehicles and for street cars to pass through, or "clear," intersections; a study of time necessary for vehicles to start after "Go" signal is given ("stand-by losses"); a study of "turn infiltrations" and their effect on the reservoir capacity of short blocks.

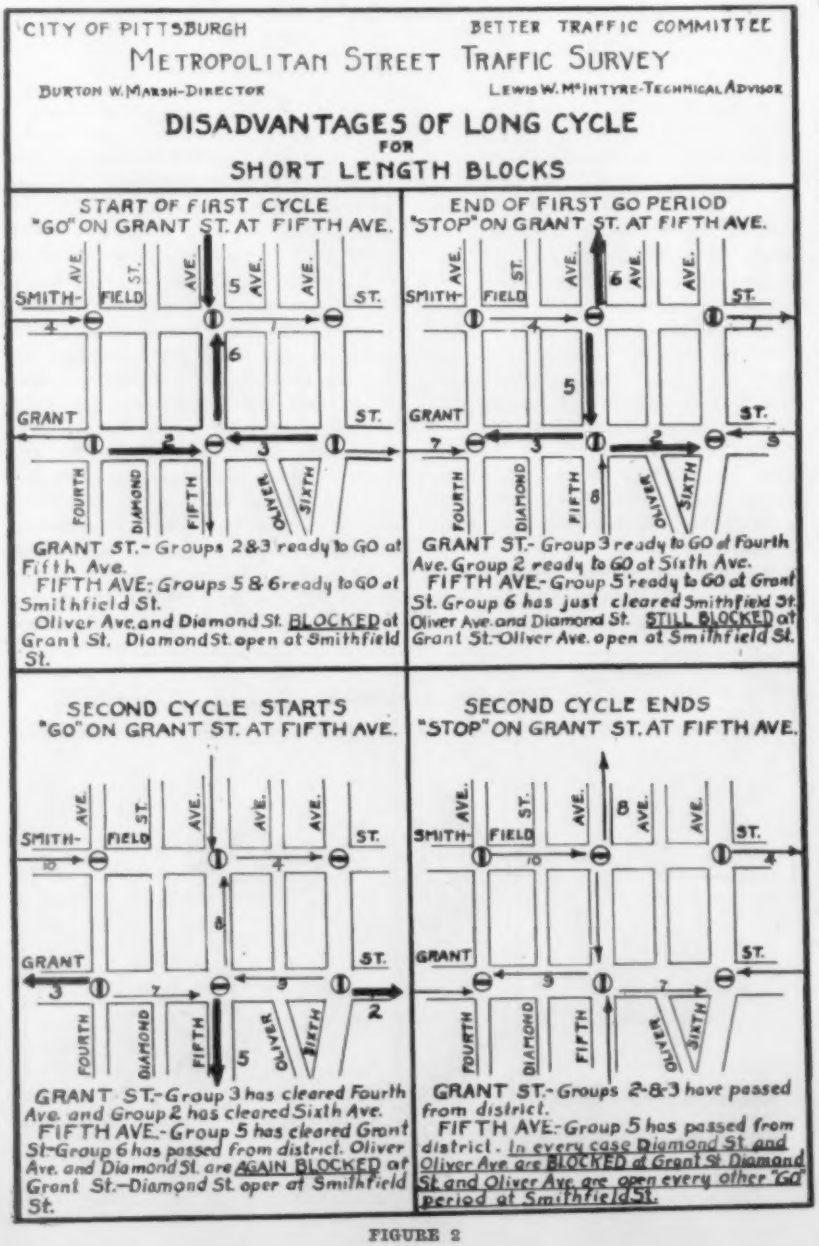

CITY OF PITTSBURGH
BETTER TRAFFIC COMMITTEE
METROPOLITAN STREET TRAFFIC SURVEY
BURTON W. MARSH-DIRECTOR
LEWIS W. McINTYRE-TECHNICAL ADVISOR
DISADVANTAGES OF LONG CYCLE FOR SHORT LENGTH BLOCKS
START OF FIRST CYCLE "GO" ON GRANT ST. AT FIFTH AVE.
GRANT ST.- Groups 2&3 ready to GO at Fifth Ave.
FIFTH AVE: Groups 5 & 6 ready to GO at Smithfield St.
Oliver Ave. and Diamond St. BLOCKED at Grant St. Diamond St. open at Smithfield St.
END OF FIRST GO PERIOD "STOP" ON GRANT ST. AT FIFTH AVE.
GRANT ST.- Group 3 ready to GO at Fourth Ave. Group 2 ready to GO at Sixth Ave.
FIFTH AVE.- Group 5 ready to GO at Grant St. Group 6 has just cleared Smithfield St.
Oliver Ave. and Diamond St. STILL BLOCKED at Grant St.-Oliver Ave. open at Smithfield St.
SECOND CYCLE STARTS "GO" ON GRANT ST. AT FIFTH AVE.
GRANT ST.- Group 3 has cleared Fourth Ave. and Group 2 has cleared Sixth Ave.
FIFTH AVE.- Group 5 has cleared Grant St-Group 6 has passed from district. Oliver Ave. and Diamond St. are AGAIN BLOCKED at Grant St.-Diamond St. oper at Smithfield St.
SECOND CYCLE ENDS "STOP" ON GRANT ST. AT FIFTH AVE.
GRANT ST.- Groups 2-&-3 have passed from district.
FIFTH AVE.- Group 5 has passed from district. In every case Diamond St. and Oliver Ave. are BLOCKED at Grant St. Diamond St. and Oliver Ave. are open every other "GO" period at Smithfield St.
SMITH-FIELD ST.
AVE.
GRANT ST.
FOURTH AVE.
DIAMOND ST.
FIFTH AVE.
OLIVER AVE.
SIXTH AVE.

FIGURE 2

Main Conclusions and Recommendations

After careful analysis of the facts, the following main conclusions were reached:

1. In view of its great volume and primary importance, first consideration should be given in the design of any traffic control system to pedestrian traffic. Nearly two-thirds of all people who crossed six major intersections did so as pedestrians.
2. Pedestrian traffic should then obey the traffic signals.
3. Of all street transportation units, the street car deserves primary consideration in the design of any signal system, since it transports the great majority of the people.
4. Immediate consideration should be given to the elimination of many troublesome left turns.
5. The completion of certain important street improvement projects should not prove any serious hindrance to a flexible signal system.
6. Immediate consideration should be given to the prohibition of horse-drawn traffic on certain major streets during the afternoon peak hours, because of the very small amount of such traffic, and because of its slow speed and consequently serious congesting effect.
7. A properly designed electric traffic control signal system for the downtown district is feasible, would improve traffic conditions considerably, and would be economically justifiable. Not only did the final timing diagrams show that a proper system would "work," but also the following supporting conclusions were drawn:

IMPROVEMENT OF TRAFFIC CONDITIONS

(a) A saving in time to traverse the signalized area of at least 30 per cent could be expected.

(b) The control system would postpone the day when the saturation point of the narrow streets will be reached.

(c) It would increase the ease and convenience of doing business in the downtown district. It would thus retard premature decentralization of business.

(d) The system would provide sixteen-hour control contrasted to approximately

eight-hour control as at present.

(e) Experience in other cities indicates that a material reduction in traffic accidents would result from the installation.

(f) It would make provision for pedestrians to cross the roadway in an orderly and dignified fashion.

(g) Signals are more easily seen and have a greater attention-compelling value than an officer.

(h) Experience in other cities, notably Chicago, indicates that considerable improvement in loading and acceleration of street cars would result from the installation. Street-car operators and the public in general, would strive to "keep in step" with the system.

ECONOMIC JUSTIFICATION

(a) An annual saving in cost of handling traffic in the district would be secured. This would amount to at least $16,000 under present conditions and to more as traffic continued to increase.

(b) The system would make unnecessary a constant increase in traffic officers in the downtown district, providing, as it does, 16-hour control at 100 intersections. A considerable increase in traffic would be satisfactorily handled by the system without increased annual cost.

THE FOLLOWING RECOMMENDATIONS WERE THEREFORE MADE:

1. The immediate installation of a "flexible progressive" electric traffic control system to cover 100 intersections in the central business district.

2. That the plan for financing be as follows: (a) The city to own, install, operate and maintain the signal units and control mechanisms; (b) The city to rent, under a 10-year contract, the underground duct lines, cables, and service connections from the local electric light company.

This financing plan would involve an estimated initial investment by the city, including engineering costs, of $125,000, and an estimated total annual expenditure for rental charges, operation and maintenance of about $60,000.

Other recommendations provided for action on certain of the above-listed, main conclusions.

Features of the Recommended System

The "flexible progressive" system recommended is a system designed to permit continuous movement of groups of vehicles, at approximately a predetermined speed, on both main and cross streets. In order to accomplish this, the signals at each intersection operate in a definite relationship to signals at all other intersections. All possible flexibility is provided in settings and adjustments, so that, for instance, changing traffic demands at a corner may be provided for by altering the percentage of cycle allotted to "Go" on the main street, etc.

In more detail, the proposed system is to conform to the following functional requirements:

1. There shall be positive control of the length of the total cycle, so that it is exactly the same at all controlled intersections.

2. It shall be possible to vary the length of the total cycle between wide limits, from the central control point.

3. It shall be possible, at each intersection, to make the green light on the main street appear at any desired second during the cycle. (Note: It was not felt that the advantage of being able to perform this adjustment at the central control point would warrant its cost.)

4. Once a cycle, there shall be a positive automatic method of keeping the local controllers "in step" (that is, keeping the green light on the main street starting at the proper second).

5. At each intersection, it shall be possible to divide the cycle so as to give desired percentages to the green, red and green-amber, or amber, periods. It shall also be possible to vary these percentages within reasonable limits. (It was not felt that the advantage of being able to perform this adjustment at the central control point would warrant its cost).

6. When traffic conditions demand, it shall be possible to manually control signals at specified intersections for any desired time interval.

7. Provision shall be made so that from a fire station or some other point, the normal operation of the control system may be interrupted, and by a switch, any predetermined combination of signals set up at predetermined points for any desired length of time. This provides for fire or emergency control.

Possibility of control by separate districts or zones was also included.

The survey recommended a system in

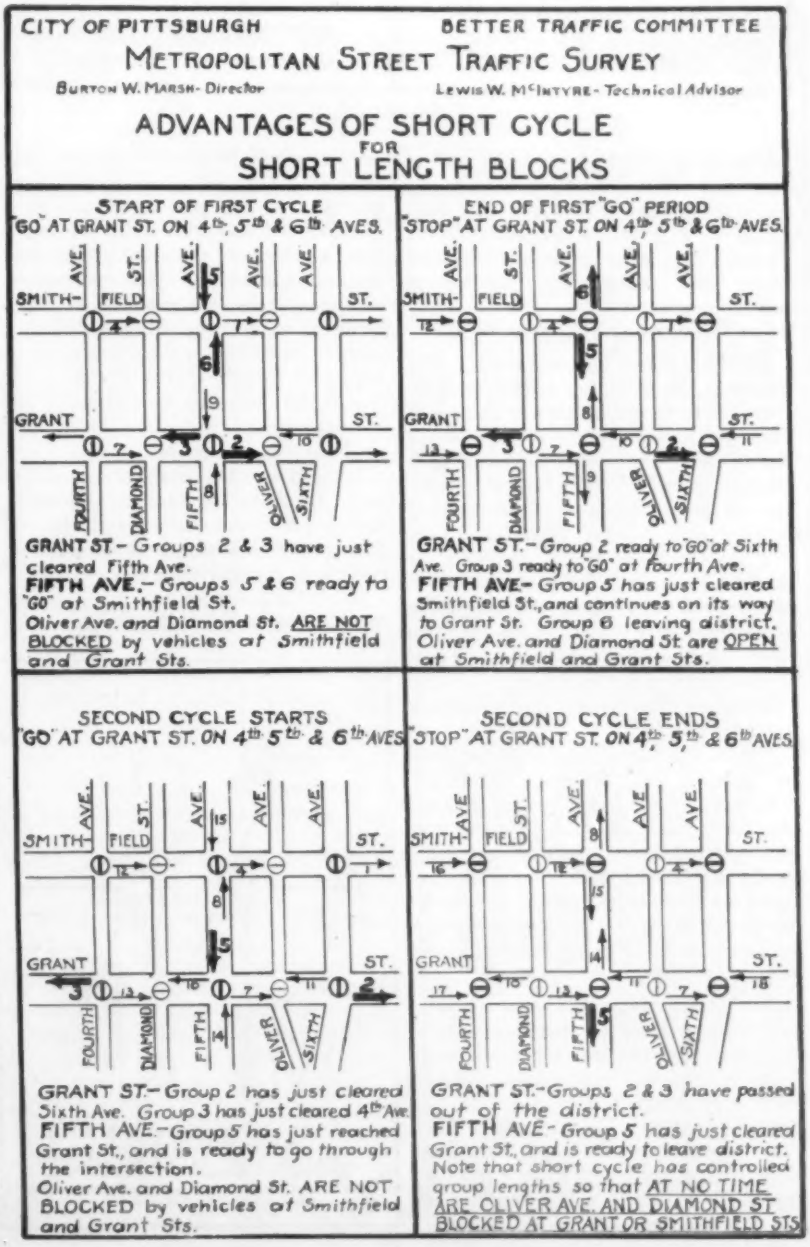

CITY OF PITTSBURGH
BETTER TRAFFIC COMMITTEE
METROPOLITAN STREET TRAFFIC SURVEY
BURTON W. MARSH - Director
LEWIS W. McINTYRE - Technical Advisor
ADVANTAGES OF SHORT CYCLE FOR SHORT LENGTH BLOCKS
START OF FIRST CYCLE "GO" AT GRANT ST. ON 4th, 5th & 6th AVES.
GRANT ST. - Groups 2 & 3 have just cleared Fifth Ave.
FIFTH AVE. - Groups 5 & 6 ready to "GO" at Smithfield St.
Oliver Ave. and Diamond St. ARE NOT BLOCKED by vehicles at Smithfield and Grant Sts.
END OF FIRST "GO" PERIOD "STOP" AT GRANT ST. ON 4th, 5th & 6th AVES.
GRANT ST. - Group 2 ready to "GO" at Sixth Ave. Group 3 ready to "GO" at Fourth Ave.
FIFTH AVE - Group 5 has just cleared Smithfield St., and continues on its way to Grant St. Group 6 leaving district.
Oliver Ave. and Diamond St. are OPEN at Smithfield and Grant Sts.
SECOND CYCLE STARTS "GO" AT GRANT ST. ON 4th 5th & 6th AVES.
GRANT ST. - Group 2 has just cleared Sixth Ave. Group 3 has just cleared 4th Ave.
FIFTH AVE. - Group 5 has just reached Grant St., and is ready to go through the intersection.
Oliver Ave. and Diamond St. ARE NOT BLOCKED by vehicles at Smithfield and Grant Sts.
SECOND CYCLE ENDS "STOP" AT GRANT ST. ON 4th, 5th & 6th AVES.
GRANT ST. - Groups 2 & 3 have passed out of the district.
FIFTH AVE - Group 5 has just cleared Grant St., and is ready to leave district.
Note that short cycle has controlled group lengths so that AT NO TIME ARE OLIVER AVE. AND DIAMOND ST BLOCKED AT GRANT OR SMITHFIELD STS.

FIGURE 3

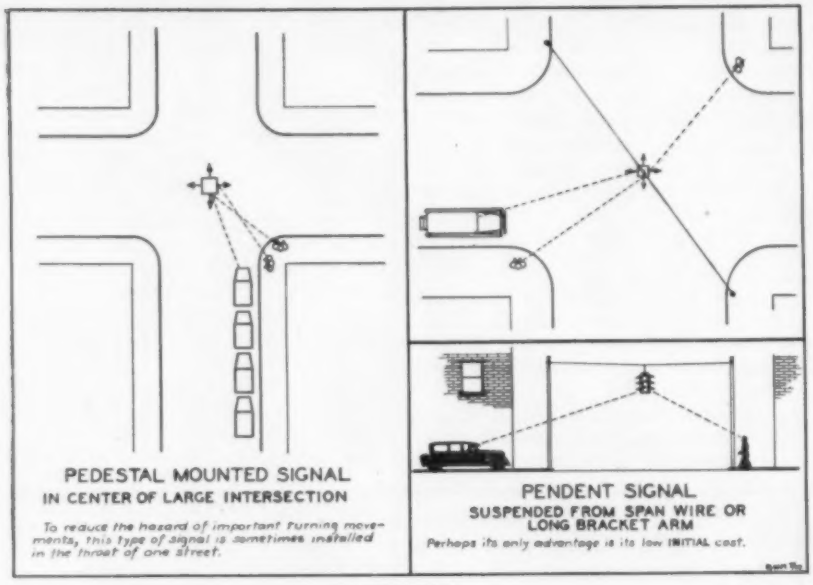

PEDESTAL MOUNTED SIGNAL
IN CENTER OF LARGE INTERSECTION
To reduce the hazard of important turning movements, this type of signal is sometimes installed in the throat of one street.
PENDENT SIGNAL
SUSPENDED FROM SPAN WIRE OR LONG BRACKET ARM
Perhaps its only advantage is its low INITIAL cost.

FIGURE 4

which power would be "picked up" at each signal location, or at local points for small groups of signals. This local "pick-up" of power is in contrast to the Chicago Loop signal system in which all power lines emanate from the central control point.

Cycle Length

Figures 2 and 3 illustrate roughly why the cycle length for this system must be short. The diagrams also indicate how cycle length for a given speed was approximated. The figures are based on a constant speed of traffic on all streets, and an equal volume of traffic moving on all streets. (Note: Smithfield Street is a one-way street.) *The diagrams are also based on a "limited progressive" system* (all signal lights changing color simultaneously). The length of two short blocks is also assumed to be equal to the length of one long block. (Note: Fortunately, this assumption is roughly a correct one.)

Figure 2 is based upon traffic moving in "groups" or "platoons," practically the length of the *long* blocks. Observe the intersection of Fifth Avenue and Grant Street (but do not now read notes on the diagrams). *Except for amber periods, the cycle length will be seen to be the length of time required for one group on each street* (say group 3 and group 5) *to pass through the intersection.*

Now, since these groups are practically a long block in length, it is evident that when the first vehicle of group 5 starts through Grant Street, the last vehicle of group 5 will have just left Smithfield Street. The length of that "Go" period must, therefore, be practically equal to the length of time required for the last vehicle to travel the long block at the assumed speed. The "Go" period for group 3 (under assumed conditions) would be of equal length. The cycle length would be the sum of these two "Go" periods, plus amber periods.

Figure 3 is based on traffic moving in groups practically the length of the short blocks. Considering the assumptions and using again the above kind of analysis, it is quickly evident why Fig. 3 is referred to as having the *short* cycle, as compared to that of Fig. 2. By referring to the notes on the diagrams, the necessity of using a short cycle for these conditions is readily seen.

Actually, conditions are not so simple as in the above assumptions. However, they approximate the assumptions, and the cycle length was approximated according to the above method.

Other factors enter into a final determination of cycle length, however. For instance, the length of the amber period required for pedestrians to finish a crossing started just at the end of their "Go" period, is constant. The shorter the cycle, the greater the percentage of it which is given over for that purpose, and taken from time for vehicle movement.

Also, street-car speed (including loading) is vastly different from passenger automobile speed. Fortunately in Pittsburgh, the ratio is close to 1:2 and the cycle for automobiles (where they can pass street cars) is satisfactory for street cars, the latter moving from stop points roughly on every second "Go" period.

Proportioning of "Go" Periods at Each Intersection

The accuracy with which the total time for vehicle movement at an intersection is apportioned between "Go" periods on the intersecting streets, is very important for efficiency. Three different apportionment methods were used by the survey:

1. *Officer's Interval.*—The officer's apportioning of "Go" periods was determined for different periods of the day. This proportioning was only applicable to existing conditions. The effect of eliminating turns could not be figured by this method.

2. *Unit Time Proportioning.*—The uint times necessary for street cars and vehicles to clear typical intersections were determined. Knowing numbers of units to be moved, average spacing, "stand-by losses," turn delays, etc., proportions were built up.

3. *Synthetic Interval Proportioning.*—This method was based on the premise that for free-wheel vehicles moving at approximately the same speed and with no turns permitted, the time allotted to each street should be as the volume of free-wheel traffic presenting itself in the critical lane during a specified period. Corrections were made for variances from the assumptions.

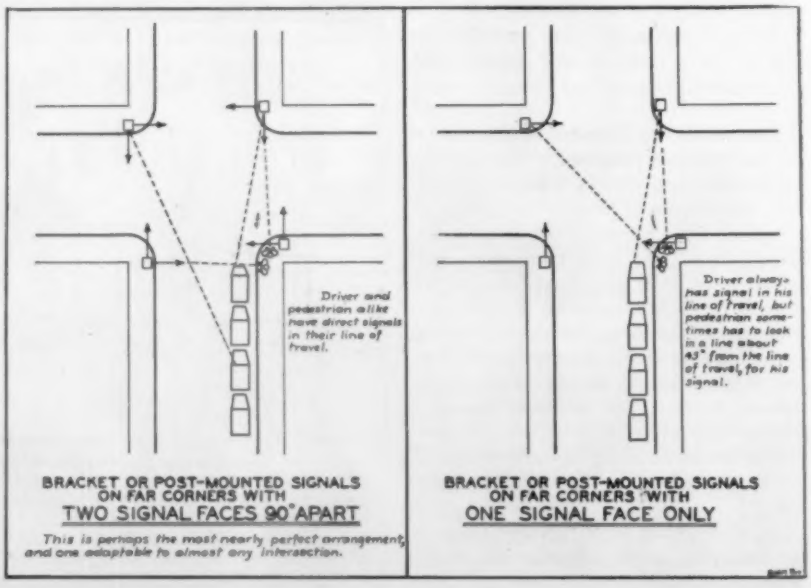

Driver and pedestrian alike have direct signals in their line of travel.
BRACKET OR POST-MOUNTED SIGNALS ON FAR CORNERS WITH TWO SIGNAL FACES 90° APART
This is perhaps the most nearly perfect arrangement, and one adaptable to almost any intersection.
Driver always has signal in his line of travel, but pedestrian sometimes has to look in a line about 45° from the line of travel, for his signal.
BRACKET OR POST-MOUNTED SIGNALS ON FAR CORNERS WITH ONE SIGNAL FACE ONLY

FIGURE 5

Amber and Green-Amber Features

The amber period, from the pedestrian point of view, should be long enough so that, having started just as his "Go" period ended, he would reach a safety zone or the opposite sidewalk before the cross traffic started. For average downtown roadways, this requires about 6 seconds.

Vehicles, on the other hand, do not need more than about a 2-3-second amber. Here are two conflicting needs. With a 45- to 50-second cycle, two 5- or 6-second amber periods during which vehicles could not proceed, would take too large a percentage of the cycle. It was therefore desired to permit vehicles to continue to move for the first two or three seconds of the interval needed for pedestrians to clear the roadway.

The following cycle was recommended: green, green-amber, red, green. On the first two or three seconds of the 5-second green-amber period, vehicles could continue to move. The green-amber would thus be a warning and a clear intersection period for vehicles. Pedestrians should not *start* to cross after the overlapped amber light appears. Thus the entire green-amber period for pedestrians would be a clear-intersection period.

A further refinement was considered—that of splitting the above-described green-amber period into a 2½-second green-amber period followed by a 2½-second amber period. Vehicles could proceed as long as a green light showed (green plus green-amber). Pedestrians should not *start* to cross after the overlapped amber light appeared. The practical worth of this cycle increases with the length of time required for pedestrians to cross to places of safety. It is proposed to try it out in the East Liberty district, where 11-12 seconds are required for pedestrians to cross Penn Avenue.

Type and Location of Signals

As already indicated, the three-color system (green, amber, and red lights) was decided upon as against the two-color system (green and red lights only). This decision was made after careful consideration of the advantages and disadvantages of both systems.

Vertical bracket or post-mounted signal units mounted over the sidewalk near the curb, were decided upon in preference to pendents, or roadway pedestal signals. Narrow streets and car-tracks immediately excluded the pedestal type, and many disadvantages eliminated the pendent type. Figure 4 shows one disadvantage—attention must be directed decidedly upward when the driver should be watching the intersection. The efficiency of the optical system is also materially reduced. Bulb replacement and cleaning are serious problems.

The far, right-hand corner location was favored for several important reasons. Figure 5 shows both single-faced units, and two-faced units with faces 90 degrees apart. Single-faced, far-corner units at regular intersections give all vehicles a correct-colored signal directly ahead. They give pedestrians either a correct colored signal directly ahead or a reversed signal at about 45 degrees from the line of travel. Near-corner, single-faced signals give pedestrians ready to cross the roadway, *no* signal at all.

At light pedestrian intersections, it is planned to install for the present, single-faced units. At heavy pedestrian intersections, two signal faces at 90 degrees are planned. Figure 5 shows how satisfactorily this system provides for both pedestrians and vehicles.

At irregular intersections, special installations are sometimes required. There are planned some few near-side units in such cases. It is not expected that any serious confusion will result.

Installation Plans

The pole-erection contract is expected to be let by June 1, and the contract for signal and control equipment by Aug 1. It is expected to have the system in operation before the end of the present year.

Detention Periods Required for Coagulation of Lake Erie Water

THE city of Cleveland, Ohio, is perhaps unique in having two water purification plants of about equal capacities and the raw water from each plant of practically equal quality. Experiments were made during 1926 to determine the proper period of detention for coagulation. The experiments were made by operating one plant with a fixed detention period of 4½ hours, while the other plant was operated using various detention periods. The rate of treatment of the water with coagulant was varied at each plant in accordance with bacteriological results. No definite conclusion was reached as to the most effective period of detention, but the experiments are being continued. It was learned that seasonal changes, water temperature and microscopic organisms which play an important part in the operation of a filter plant treating a clear water like that of Lake Erie can be handled to better advantage by making changes in detention periods in the coagulation basin, and a distinct saving was made in the amount of coagulant necessary to effect proper coagulation.

The discussion of a paper on this subject presented before the Sixth Annual Ohio Conference on Water Purification emphasizes particularly that by increasing the detention period several times when algae were present, the length of filter run could be increased considerably. The number of micro-organisms, mostly melosira, were decreased from 60 to 70 per cent in the coagulation basins. At the Akron, Ohio, filter plant filter runs were as short as one half-hour in 1915 on account of melosira. Since that time the size of the coagulation basins has been doubled, and less trouble has been experienced since with short runs.

"A Policemen's Lot Is Not a Happy One"

THE police should be popular. We know that individuals on the force do achieve that distinction through personality—evidenced, perhaps, by nothing more fundamental than a smiling morning greeting to the everyday passerby, or a cheery wave of the hand to the motorist who wishes to make a side turn. It is, in fact, the traffic cop who, as an individual, has the opportunity of pleasing the public. But the officers who oppose crime and pursue criminals are not appreciated by the public in proportion to the great service they render. President Samuel A. Carlson, of the New York State Mayors' Conference, spoke of this in his address at Albany, N. Y., on February 29:

"When we speak of crime, our attention is usually directed to the police authorities of our cities. Much unfounded criticism regarding the failure to detect and suppress crime is often laid at the door of our police force. We invariably demand that policemen shall measure up to our expectations, but we seldom give thought to the fact that the present compensation of police officers does not offer attraction to the right type of men. Furthermore, the civil service rules are sometimes a handicap rather than an advantage in securing the highest standard of police efficiency. It is also well for us to keep in mind the fact that whenever a crime is committeed, the police force is expected to instantly find the criminal and bring him to justice."

The firemen are appreciated individually, and officially en masse. Their service is usually spectacular—at the least, conspicuous, and for the good of all. Mr. Carlson says:

"Unlike the fireman, the policeman is not always a welcome intruder. His work seldom affords opportunity to play the role of popular hero. He does not go forward like the fireman, with pomp and glamor, to fight a common enemy. Everybody is on the side of the fireman. Nobody is on the side of the fire. The policeman, on the other hand, finds himself constantly up against an entirely different situation. He must face, not one, but a thousand enemies, because his every act means contact with a human being, and most of the time his duties require interference with what some one does or wants to do. If he braves the danger of a riot, the chances are nine to one that the sympathies of the public will be with the rioters and against the policeman."

The Relation of the Police and the Courts to the Crime Problem

Excerpts from a Report Submitted to the National Crime Commission February 28, 1928, by the Sub-Committee on Pardons, Parole, Probation, Penal Laws and Institutional Correction

THERE are three parts to the machine of criminal justice which we have set up to protect ourselves from the depredations of criminals. They are the police, the courts, and the institutions and agencies which deal with convicted offenders. The public has not seemed to grasp the importance of the role which the police and the courts play in our effort to reduce crime, and is inclined to place most of the blame on the prisons, the reformatories, the probation and parole agencies which together make up the third part of the machine of criminal justice. Newspapers make much of the "coddling of offenders," the quartering of prisoners in "palace prisons," the general "jail deliveries" through the operation of parole laws, and the "soft treatment" afforded criminals on probation. Undoubtedly these institutions and agencies for dealing with convicted offenders deserve some of the censure heaped upon them, and should, moreover, be held strictly to account for their failure to do the tasks assigned them. We insist, however, on the police and the courts bearing their full share of the responsibility for our notorious crime record.

Few Arrests and Fewer Convictions

The most startling thing is the small number of criminals who are caught by the police. . . . It must also be remembered that the number that is finally handed on by the courts to the agencies and institutions for punishment and correction is still smaller. Many of those brought to the courts by the police pass out of the picture for one reason or another as the case proceeds and are not, therefore, included in the guilty residuum that remains for punishment and correction. The police arrest those who are merely suspected of crime. Some of those will later, of course, be found by the courts to be innocent. This winnowing of the wheat from the chaff, or rather the chaff from the wheat, is the function and duty of the courts, and necessarily the number of guilty individuals will be less than the number arrested. There is, however, grave suspicion, based indeed on good evidence, that the ratio of those whom the courts finally decree for punishment and correction to the number arrested and brought to their doors is far smaller than it should be. In other words, the job of separating the chaff from the wheat is not well done.

All this is tremendously important both to those who are interested in the general problem of reducing crime and to those who are concerned with the narrower problem of punishment and correction. There is now a tendency to insist on harsher punishment as a cure-all for crime, whereas of far more importance, it will be found, is the building up of police and court machinery capable of catching and convicting a far larger percentage of the individuals who commit crimes.

Foreword to the Report
By Hon. Frank O. Lowden
Chairman of the Committee

In this report prepared by the Secretary of the Committee, Dr. Louis N. Robinson, the attempt has been made to gather together some of the most important findings of the state and city crime commissions with respect to the relation of the police and the courts to the present crime problem. In addition, certain suggestions looking toward the improvement of these two agencies have been sketched in outline, although no effort has been made to make this report a treatise on police organization or the law of criminal procedure. The public is, we believe, entitled to a sufficient amount of information to enable it to understand how greatly the solution of the crime problem depends on the police and on the courts.

In our opinion, too much attention has been focused on the punishment of criminals. But before a criminal can be punished, or dealt with as science suggests, he must first be caught and convicted. Recent investigations have revealed for the first time how small the proportion really is of convictions to crimes committed or to individuals arrested. The effectiveness, of course, of any form of punishment or of any kind of treatment depends in large part on the number of criminals on whom the punishment or treatment can be brought to bear. This fact we seem lately to have overlooked, contenting ourselves with the drastic punishment of the few who have been caught. This is an easy way out, too easy in fact to bring results. Improvements in the organization and in the work of both the police and the courts are vitally necessary if we are to make headway against crime. This much at least is certain.

Opportunities to Side-Step Justice

In the diagram on page 86, illustrating the course of criminal procedure in felony cases in the city of Cleveland, the opportunities to side-step justice are clearly shown.

Instead of this loosely built rail fence through which criminals can break seemingly at will, what is needed, to use the language of the farmer, is "a fence, horse high, bull strong and hog tight."

The procedure in criminal cases illustrated by the preceding diagram is not peculiar to Cleveland. The Minnesota Crime Commission describes the situation thus:

"To present the picture in a different light, what must the criminal think of society's efforts to deal with him? If he be familiar with the actual operation of the criminal law, he must know that he may escape arrest altogether; that if arrested, he may not be held by the police or sheriff; if held, he may not be indicted or have information filed for his prosecution; if prosecution be commenced, he may not be brought to trial, because the county attorney may *nolle* or dismiss, or he may be allowed to plead guilty to a lesser offense than that which he has committed; if tried, the trial may result in failure to convict; if convicted, he may have sentence suspended, or if committed, it may be for a maximum lower than that provided by statute; and if, finally, he should reach a state penal institution, he may be released by the Board of Parole; and, if that fails, he may still apply for a pardon."[2]

The Municipal Court of Cleveland takes the place of the justices of the peace or magistrates who commonly serve as courts of inferior jurisdiction elsewhere. With this minor substitution, the diagram constitutes a fairly accurate presentation of what is happening every day throughout the length and breadth of this country in the domain of criminal justice.

Rural Areas Without Police

The policing of our small towns and rural areas, if we omit those few states now having state constabulary forces, depends on a police organization which is but a decayed and attenuated survival of ancient systems which England had

[1]The Criminal Courts, Part I of the Cleveland Foundation Survey of Criminal Justice in Cleveland, p. 10. A slight change has been made in the form by the author of the present report.

[2]Minnesota Law Review, Vol. II, January, 1927, Supplement, p. 16.

at different periods of its early history. The sheriff, an official shorn of much of the power which he possessed in Anglo-Saxon days, is now as formerly the chief conservator of the peace in the county, bound to pursue and to capture all criminals. He has the right to summon to his aid the *posse comitatus*, the whole armed force of the county, a power which he acquired in Norman times, and has in general the powers and duties of any police officer in the maintenance of the peace. The only other set of police officials in the county are the constables, with practically the same powers as the sheriff in the matter of arrests and the detention of persons charged with crime. They date from the Norman period and have steadily lost in importance as the office of the justice of the peace, to which they are closely attached, has declined in power. . . .

Today our sheriffs are elected locally (except in Rhode Island), are never the strongest men in the counties, are not answerable to any central power, and are usually poor men paid an inadequate salary and, therefore, dependent on fees so arranged that it is a financial loss for them to pursue criminals.[1] . . . Few sheriffs take the duty of apprehending criminals seriously, and many even seem surprised, when questioned, to hear that this is one of their duties.[2] Not a single sheriff so far as we know has created a force out of his deputies that bears the slightest resemblance to a modern police force. As a matter of fact, the constitutions of approximately one-third of the states prevent a sheriff from succeeding himself.[3] . . .

Shall We Have a State Constabulary or Build Up County Police?

The absence of good county police forces has given the necessary excuse for the creation of state constabulary forces, such as that of Pennsylvania. The real reason that led to the creation of the Pennsylvania force was the disorders that followed in the wake of strikes and labor disturbances, but, with great plausibility, and certainly with sound logic, the force has been defended on the ground that the rural parts of the state need to be more effectively policed. There are now eleven states, Pennsylvania, New York, New Jersey, Massachusetts, Connecticut, Texas, West Virginia, Michigan, Colorado, Maryland and Delaware, that have state constabulary forces. . . .

Perhaps we need slightly to change our conception of a state constabulary force from that of a separately organized body operating independently, to that of a staff charged with the stimulation, development and coordination of local police forces. This was one of the recommendations of the Minnesota Crime Commission that was enacted into law in 1927[1] The law provides for the establishment of a bureau of criminal identification with far broader powers than are usually associated with such a bureau, providing among other things for the establishment of police schools and for the collection of reports from courts as to prosecutions and disposition of criminal cases. . . .

Do We Really Want Better City Police?

The hardest thing in the world to do is to run away from one's self, and that is what we are constantly trying to do in seeking to explain city police inefficiency by reference to difficulties peculiar to American society or by turning from one to another fruitless scheme of organization to secure improvement. There must be first the desire and the will to have a more efficient police force. No one who knows anything about public life in our cities will deny that the character and the tone of our police forces but mirror the character and the tone of city administration in general. The task is, therefore, either to raise the general level of all public work or to focus special attention on the police problem, "take it out of politics," and do what we have done with our school system, place it on a higher plane than other branches of public work, demanding and getting more than we are accustomed to demand and get elsewhere in public administration. The thing that is most hopeful in the situation is that politicians, "regular politicians," are coming to feel that the police should be taken out of politics. If our election machinery can be simplified at the same time so that there will be less need of political workers, this growing sentiment on the part of politicians may be somewhat stimulated.

Business Principles Applicable to Police Organization

It is, of course, easily possible to point specifically to certain features of police organization on which too much emphasis cannnot be laid if we are to make progress. First of all, the cities should have control of their police. There is nothing in experience to indicate that the state government can cope with the problem of policing a city any more effectively than can the government of the city itself.

Secondly, there should be a single head of the police force, not a cumbersome board or commission. In other words, somebody must be made responsible, as in business life, for doing the job. Furthermore, and this is extremely vital, it should be recognized that the leadership of a city police force is a task requiring training and experience and that a good man should be continued in office so long as he can produce results regardless of changes in the city administration. "The Police Commissionership of a European city," says Fosdick, "is a career of prominence and dignity attracting the best talent the university or the government service can produce."[1] We have tried, it is true, to compromise between politics and efficiency by having a more or less permanent chief subordinate to the commissioner, but his power to select and to discipline men and in other ways to build up the force is too shadowy to produce results. Politics wins. Our present police commissioners represent all occupations and professions and, as a result, many of them are manifestly and ridiculously unfit for their jobs. These now come and go without knowing or without learning what their work really is.

In regard to the men themselves who make up the force, good pay, selection for ability, responsibility to the commissioner, not toward politicians, permanence and training will produce results. It seems almost foolish to mention these principles of building up an organization. They are so universally known and used in private business life, that no one questions them. We simply do not have the good sense to use them in public life.

To Prosecute or Not to Prosecute?

A criminal prosecution is brought in the name of the state. But who or what is the state? For the purpose of prosecution in criminal cases, it is the prosecuting attorney, district attorney or county attorney, as he is variously known. His importance in any movement to stamp out crime must not be overlooked. . . .

The duties of the prosecuting attorneys are fixed by statutes and therefore differ slightly in the various states. The most significant thing to us is the amount of discretion which he has in his work. To prosecute or not to prosecute, that is largely a matter of his judgment and his will. . . .

In what ways, if any, should this great power of the prosecuting attorneys be modified or controlled? In some states, the consent of the court is necessary for the dismissal of criminal prosecutions which have reached the stage of an indictment or an information. This we believe to be a valuable check and should be everywhere adopted. It seems to us, however, that the power of the prosecuting attorneys cannot and should not be greatly reduced. Someone, we must remember, has to be responsible for the work. *The essential thing is for the public to recognize what immense power the prosecuting attorney wields and to bring this agency under public control through insisting on the yearly publication of a detailed report showing what happened*

[1]Missouri Crime Survey, p. 74.

[2]Bruce Smith, The State Police, The Macmillan Co., 1925, p. 17.

[3]Ibid., p. 15.

[1]Chapter 224, Session Laws, 1927.

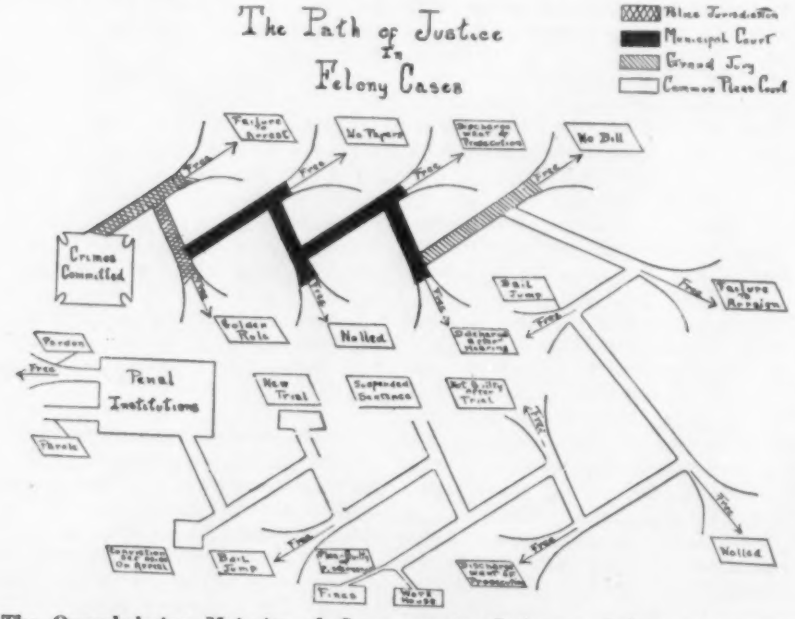
[1]European Police Systems, p. 177.

at each stage of the criminal process falling under the influence of the prosecuting attorney and why such action was taken. At present few such reports exist, and the public gets its idea of the work of the prosecutor's office solely through the newspaper publicity attached to a few notorious cases. Since such tremendous power over criminal justice resides in the hands of the prosecuting attorney, his election should be a matter of great import to each city and county. If this office is controlled by untrustworthy political groups, no amount of legislation will bring any improvement in practice.

men to the office. In our opinion the elimination of the justices of the peace by Detroit and the development of a consolidated court to handle these early processes of criminal procedure constitute the best plan yet proposed. It makes for efficiency, dignity and substantial justice.

Abuse of Bail

The right of bail, except in capital cases, is guaranteed by the constitutions of all but nine of the states; its abuse through lax administration is practically universal, in all of them constituting a serious check on the usefulness of our



The Overwhelming Majority of Cases Are Tried in Our Poorest Court

In discussing the policing of our rural areas, we emphasized the fact that the offices of sheriff and constable had greatly declined in importance and that as a result our rural areas were very inadequately policed. Justices of the peace have suffered a similar decline. In early English days, these officials were knights sworn to the service of their lord and king; today they are simply pawns in the political game. In the city life of our times they are as much of an anachronism in court work as are the constables in police work. . . .

Every crime commission or organization interested in replacing this bit of obsolete machinery should, we believe, study carefully the experience of Detroit with its Consolidated Criminal Court or Recorder's Court, as it is more commonly known. All misdemeanors and all preliminary hearings of felony cases are heard by judges of this court, who also pass upon all applications for warrants of arrest. These judges are learned in the law and are paid a salary sufficient to attract good

courts. It is one of the most common sources of delay in criminal trials and is, moreover, used as a means of escaping from all consequences of crime. . . .

There are two reasons why forfeited bail is not collected,—much cannot be collected because it was worthless in the first place and secondly the machinery for enforcing collection is either inadequate or does not function. . . .

The machinery for examining the offers of bail has not kept pace in growth with the ever-developing business of the courts. Professional bondsmen operate in several courts at the same time, and there should be some one office that will investigate and check up on the security offered. It is too much to ask any one judge or any one court to search the record of each individual who proposes to go bail for another. Certain cities have already taken steps in this direction. In Chicago, there is a bail bond bureau for felony cases in the office of the state's attorney and Baltimore has established a bail bond commissioner in the office of the clerk of court. . . .

After careful consideration the Subcommittee on Criminal Procedure and Judicial Administration of the National Crime Commission suggests that the following procedure should be followed:

"Each bondsman shall be examined under oath and shall be required to make full disclosure of his financial condition and submit a description of his property and the amount of his obligations, and also who, if any one, has indemnified him, and what, if any, collateral he has received and from whom. All statements made by him in such examination shall be deemed to be material allegations, and if false statements are made he shall be guilty of perjury. The bond shall be conditioned that in case the defendant should not appear, the bond shall thereupon be declared forfeited, which forfeiture shall become a final judgment against the defendant and his sureties, and execution issued for the amount thereof, unless within ten days the bondsman shall produce the defendant and satisfy the court that the defendant's absence was not with their connivance. Cash bail may be accepted in lieu of a surety bond."[1]

[*The report here discusses, under various headings, the extent to which the processes of determining guilt or innocence can be shortened without injury to the accused individual. Simplification of the wording of indictments; abolishing of the grand jury where it still exists; reduction of the number of jury trials; and giving the judge more power to direct court proceedings, are among the methods discussed and advocated. The report then concludes with the following plea for the introduction of scientific methods.*]

The Introduction of Scientific Methods

It is a common practice these days for every large business concern to have a research laboratory. One has only to think of the laboratories maintained by duPont, General Motors and General Electric to realize immediately what these laboratories mean in the development of new methods of doing old things and in the discovery of new products and new ways of serving society. There is very little to correspond to this practice in the field of criminal law and criminal procedure. The law schools teach law as it is, not as it should or could be. Our decentralized court system has hindered the development of any influential court group interested in perfecting methods of procedure and in securing proper legislation. Neither from these nor from the American Bar Association do the currents flow that shape our criminal law and procedure. How these are molded in part has been described by William Draper Lewis. He says: "Furthermore, there are many legislators who are engaged in the active practice of the law. It is a natural re-

[1]Report of the Sub-Committee of the National Crime Commission on Criminal Procedure and Judicial Administration. "Outline of a Code of Criminal Procedure," p. 2.

sult of all this that there not infrequently arrives in the legislature a representative who has just had the experience of failing to secure an acquittal of his client because the natural result of his eloquence on the jury was marred by some ruling or other conduct of the judge presiding at the trial. The outraged representative introduces a bill prohibiting all judges thereafter from following the example of the judge to whose conduct he objects. *Thus in many of our states the legislative changes in the criminal procedure represent the desires of lawyers for the defense who wish to reduce the judge, when an issue of fact is submitted to the jury, to the position of a police officer at a prize fight,* the contestants being the lawyers. Many of the evils which surround the trial of some notorious criminal case, which rightly make the layman distrust the efficiency of our courts, are due to the fact that the legislature has little by little made it impossible for the judge so to act that justice can be judicially administered."[1]

The nearest approaches to the research laboratory idea are the American Law Institute, made up of the foremost judges, law teachers and practicing lawyers and the few well-equipped probation bureaus attached to the individual courts. The Institute, financed by the Laura Spelman Rockefeller Memorial, has undertaken to formulate a Model Code of Criminal Procedure, a bit of research which ought to prove exceedingly valuable to the individual states. Wherever a court has built up a capable probation staff and secure the services of psychologists and psychiatrists to assist it in diagnosing cases, it has profited in the same way as has a manufacturing concern which through the help of its physicists, chemists and engineers has come more thoroughly to understand the nature of the material with which it deals.

The need of some bureau or group ceaselessly operating to improve procedure and organization has already been pointed out in this chapter. The decentralized, uncontrolled court system, the poor character of the minor judiciary, the lax administration of the bail system, the needless reliance on grand juries and petit juries, the irresponsible work of the prosecuting attorneys and the impossibility of finding out through statistics what is being done or should be done, all indicate a pre-scientific stage of evolution, a time when man did not believe that it was possible consciously by taking thought to improve the social machinery which had come down to him from his ancestors. Science has as yet gained little foothold in the work of protecting society from crime.

[1]The Annals, May, 1926, Vol. CXXV, p. 90.

EDITORIAL NOTE.—The complete report from which the foregoing excerpts are quoted—a pamphlet of 37 pages—is obtainable on application to the National Crime Commission, 120 Broadway, New York.

Proposed Plan to Relieve Traffic Congestion in St. Paul and Provide Parking Space for 3,000 Automobiles

A PLAN which will relieve traffic congestion on the downtown streets and provide ample parking space for years to come has been proposed to the City Commissioners of St. Paul by Druar & Milinowski, consulting municipal engineers. This plan provides a 100-foot aerial, arterial highway, using the air rights over the railroad yards and tracks for nearly two miles around the business section of St. Paul, and makes possible storage space for 3,000 cars easily available to the business district. This parking space is approached by means of ramps from eleven street intersections and gives an ideal condition for parking, inasmuch as the parking space is all covered and can easily be enclosed if necessary.

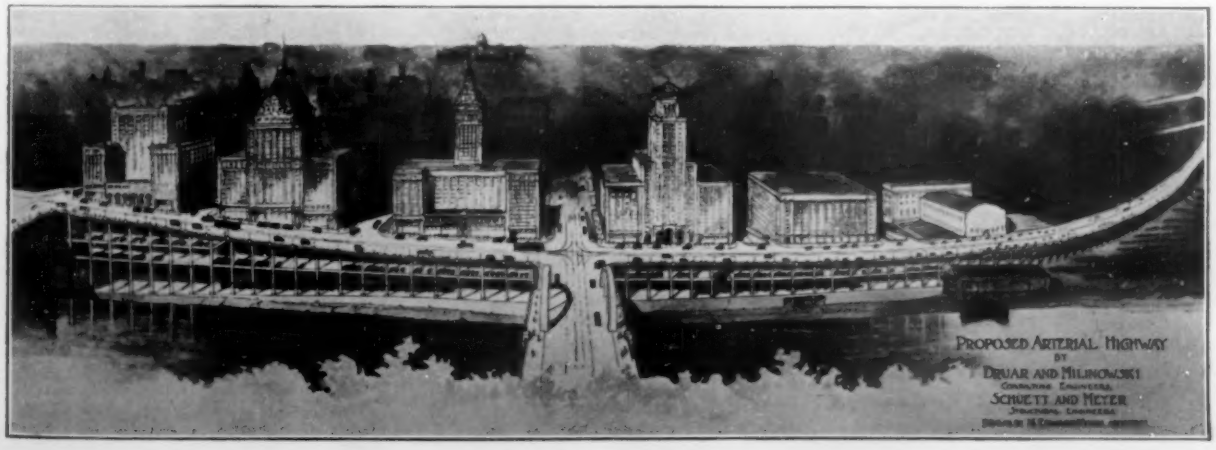
The plan provides an inner or local drive for business fronting the north side of the highway. The south side of the highway abuts on the river and will give a splendid unobstructed view of the river and other environs around St. Paul. There will be provided a two-track street-car system with connections at street intersections, so that one-way traffic may be had by the street-car company throughout the downtown district, thus reducing traffic congestion to a minimum. The outer drive will be a through arterial highway connecting the state and federal highway systems from the north and east directly to the highway systems of the south and west. Whereas, the property now abutting the railroad tracks is of little value, this highway will make it among the highest-priced in St. Paul.

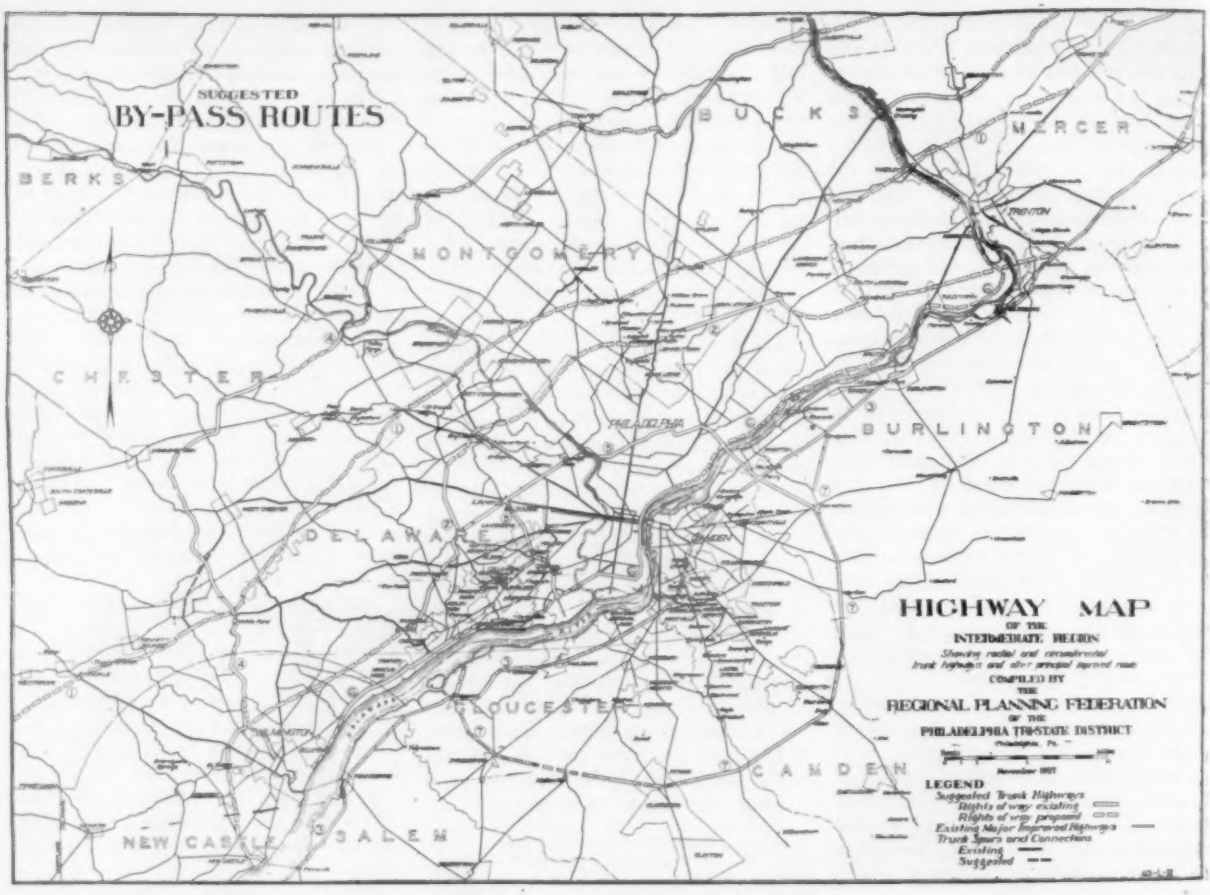
The highway will create a street ideal for the location of a civic center, and a new proposed City and County Hall would face it. It will add greatly to the beauty of the downtown district and give St. Paul a large amount of national advertising. If future needs require, the drive may be partly or fully decked for a landing-stage for airplanes, 150 feet wide by one mile or more in length, with hangars and other facilities for air travel.

Plazas are afforded at Seven Corners and the eastern end of the highway and intermediate points, which will be used for bus stations and other concessions.

The parking space alone at a charge of 25 cents per day per car will more than carry the interest on the investment in the structure, which is estimated at $6,000,000. This makes an interesting study for other hillside cities.

We must make plans.
Who looks not before
finds himself behind.
—Publius Syrus.





By-Pass Highways for Traffic Relief

Is Too Much of the Taxpayer's Dollar Going Into Road Construction, and, If So, What Is the Remedy?

A SIGNIFICANT attempt to answer the question in the heading of this article, so far as it applies to the metropolitan region of Philadelphia, is made in a carefully considered report on "By-Pass Highways for Traffic Relief," prepared by the Highway Committee of the Regional Planning Federation of the Philadelphia Tri-State District. Pointing out that the automobile, a principal reason for the recent tremendous increase in road building, is far from the saturation point of demand; that machines already in use are operated at low efficiency because of indirect, inadequate and poor roads and traffic congestion, and that thousands upon thousands of miles of new highways and streets must be constructed and thousands more must be rebuilt every year to keep pace with ever growing necessity, the committee suggests that early curtailment of the building program does not seem to be the way out. The report continues:

"If the proportion of public funds put into road building is to be reduced, the medium of reduction must be through a greater efficiency of planning and economy of construction and a longer life of paving rather than through a slowing-up of construction. This medium of reduction is at hand in far-sighted, scientific planning—planning that will establish the location, direction and width of roads and streets in such manner and in such relation to one another as to provide the most direct, convenient and pleasurable ways of getting from place to place, and, at the same time, automatically to segregate classes of traffic and confine heavy traffic to certain well-defined streets and routes. This planning should be comprehensive, extending over wide areas and disregarding political boundary lines. It should be done in correlation with the planning of all other means of transportation and uses of land.

"Under such a policy, paving programs may proceed with confidence. This, and other resulting economies, will conserve funds which may be used to build the great main thoroughfares wide enough and substantial enough to last. Local streets, assured of freedom from heavy traffic, can be paved less expensively and at much narrower widths. They too will last. All classes of paving can be carried forward without the fear of premature breaking-up by the destructive misuse which now makes paving programs so illogical, discouraging and costly.

Seven Trunk Highways Suggested for the Tri-State District

"Ways of getting past Philadelphia and other principal cities of the region *without going through* their congested centers, and of getting from one part of the suburban territory to another without going into these cities and out again have long been recognized as one of the most pressing needs of the Tri-State District. Increasing congestion in downtown sections makes this need more serious year by year. Rapid development of the outlying regions through which relieving *by-pass routes* must be built begins to obstruct the logical and economical locations for these highways and begins to make their construction more and more costly and difficult. The time is more than ripe to establish the lines of these essential roads and to safeguard and acquire their rights-of-way.

"The Regional Planning Federation sees this problem to be within the scope

of its functions and in it an opportunity to be of real service to the Philadelphia Tri-State District. After several months of careful study and after conferences with representatives of adjoining regions from New York to Washington, the Highway Committee of the Federation presents this analysis of the situation and the following suggestions for relief.

"*Three means of relief* may be employed: The first is the marking of *existing by-pass routes* so that they may be easily found and followed. The second is the *paving of unimproved links in logical existing routes* to encourage and to make possible the greater use of these routes. The third, the only adequate solution, is the *construction of new routes* over widened existing rights-of-way or through open country.

"Expedients one and two are comparatively simple and inexpensive, although none the less important and immediately needed. The problem of new routes is more difficult, and it is to this question that the Committee has given its chief attention at this time.

"Seven major thoroughfare routes are suggested, some of them designed primarily for commercial or express use with directness and convenience as the first object. Others are more scenic in character and intended for more leisurely use. Those closest to the congested centers and passing through developed territory, of necessity generally follow existing rights-of-way. In the outlying region where some choice of routes is still open, cities and other developed areas are avoided wherever practicable, and existing rights-of-way are followed only when they happen to fall in line with the best and most economical development of the new highway. The locations for these routes, as shown on the accompanying maps, are only approximate and are subject to adjustment in the interests of convenience and efficiency of service, economy and attractiveness. No definite widths are as yet suggested for any of these routes, but it is generally agreed that present-day standards of width have proven inadequate for great main traffic routes and that demands upon the highways of the future are probably beyond our present conception, and that, therefore, the great arterial highways here suggested should in no instance be less than 120 feet in width and in some cases should attain a width of 250 feet or greater. Possible exceptions may be the distinctly scenic routes or rights-of-way through heavily built-upon areas where prohibitive costs now necessitate less adequate takings.

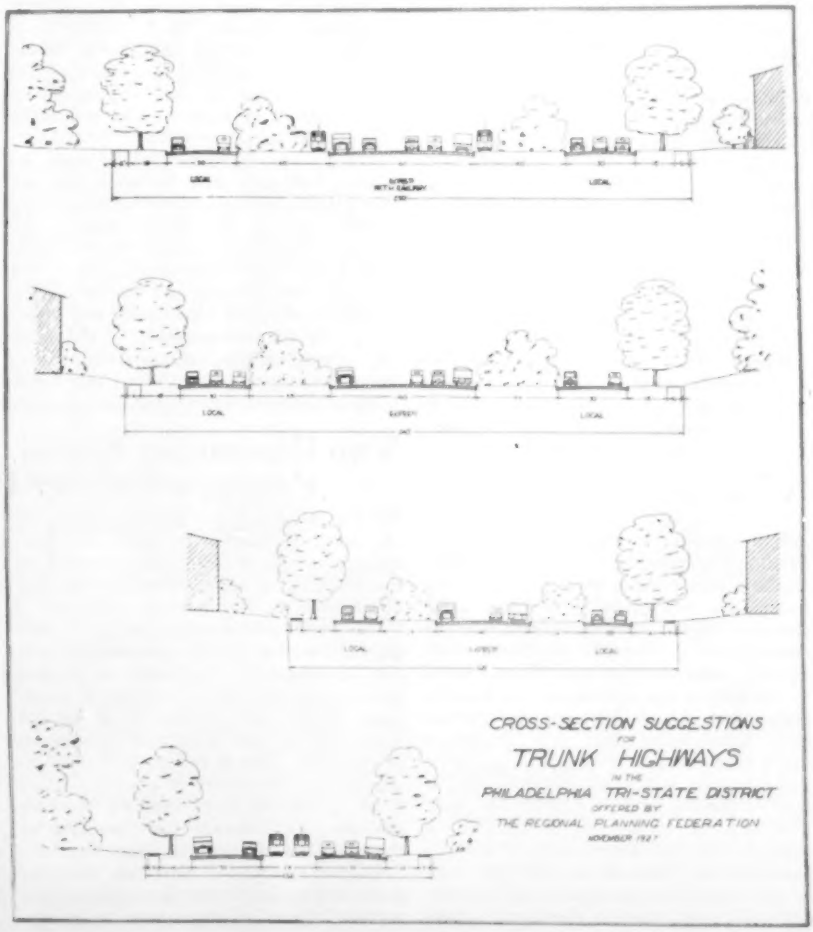
Placing the Routes Upon Official Maps and Establishing Building Lines

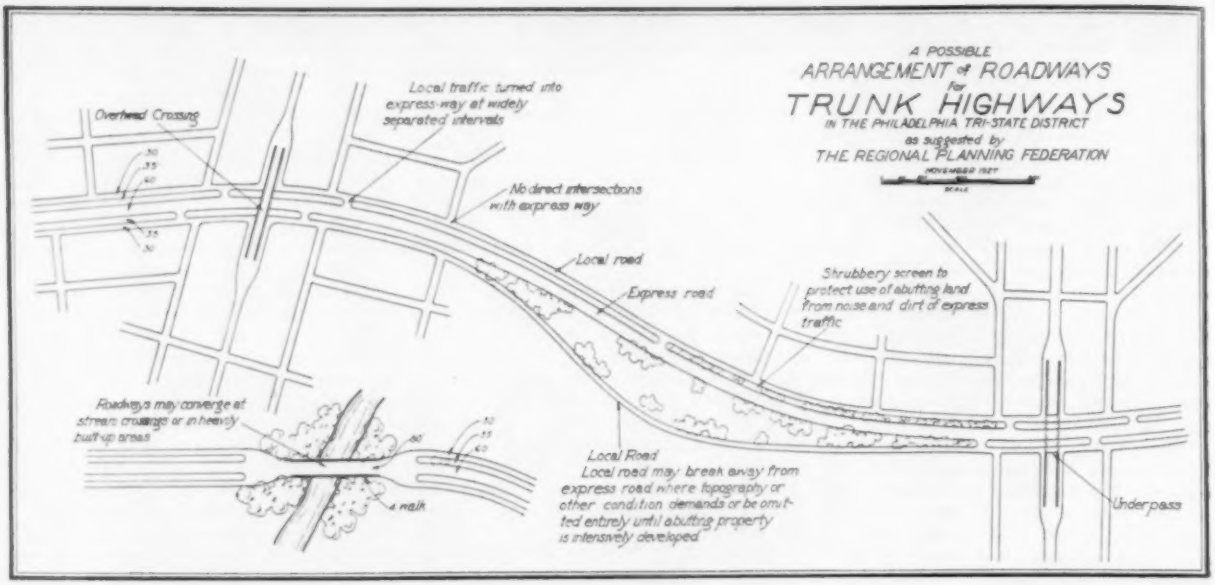
"It is not the idea of the Committee that effort need necessarily be made at once to purchase rights-of-way for these highways, but rather that the routes be placed upon the official maps or plans of the governmental jurisdictions within which they fall, to be constructed in the natural course of development. In some instances, however, it may be found that the suggested highways are of such immediate necessity, or their attainment so immediately endangered as to warrant acquisition of the rights-of-way at once and by purchase without waiting for the development of abutting property. Other routes may be safeguarded by the establishment of building lines to prevent further encroachment upon the ultimate right-of-way. No matter what the procedure, it will be found in every instance that the benefit to property and the appreciation of land values in the vicinity of the proposed highways, resulting from their establishment, will be far in excess of their cost.

"A principal object of these highways is to provide more direct, more convenient, and more expeditious movement of vehicular traffic within the region largely through the avoidance of congested centers. This practice is being accepted and adopted wherever the pressure of present-day traffic has begun to be felt. Many of the states in this country have adopted this principle. New Jersey, Delaware and Pennsylvania, in particular, offer numerous instances of such routing of their newer highways. Europe, with its much less critical traffic problem, is also adopting the by-pass principle, and many examples of such highways are to be found in the great population centers on the Continent and in the British Isles. It is no longer thought good business to waste the time of the traveler or to add to the confusion of already overcrowded business districts by forcing or permitting through traffic to enter such areas.

"The highway width and cross-section designs offered in this report are suggestive of the type of highway that is becoming increasingly necessary for the convenient and economical accommodation of traffic without injury to abutting property. The frequency and high speed of traffic on the main thoroughfares do not permit safe parking or loading and unloading from the highway. Noise and dirt from these heavily traveled roadways make it unpleasant for either living or the conduct of business in their immediate vicinity. The provision of local roadways separated from the express road by a strip of closely planted shrubbery, as a screen, solves the problem and is being employed in numerous instances throughout the country. These same local highways, paralleling the main route, serve to collect local traffic and to turn it into the main traffic streams only at long intervals and at well-planned intersections, to the great facilitation of both local and express traffic movement.

"The routes suggested here are, for the most part, the result of careful study on the ground, and the approximate locations as shown are practicable. Their number and extent may at first seem excessive. Closer study will disclose that starts have already been made on five of the seven suggested routes, indicating a pressure of immediate necessity. It must be recognized also that highways of the above character, limited as they are by requirements of directness, grade, and width, must




A POSSIBLE
ARRANGEMENT of ROADWAYS
for
TRUNK HIGHWAYS
IN THE PHILADELPHIA TRI-STATE DISTRICT
as suggested by
THE REGIONAL PLANNING FEDERATION
NOVEMBER 1927
SCALE
Overhead Crossing
Local traffic turned into express-way at widely separated intervals
No direct intersections with express way
Local road
Express road
Shrubbery screen to protect use of abutting land from noise and dirt of express traffic
Roadways may converge at stream crossings or in heavily built-up areas
Local Road
Local road may break away from express road where topography or other condition demands or be omitted entirely until abutting property is intensively developed
Underpass
4 main

be established far in advance of development if suitable rights-of-way are to be secured at reasonable costs. While adequate rights-of-way approximately, as herein suggested, are still feasible, conditions are changing from day to day. New subdivisions, new industries, new and costly developments of every kind are constantly occurring to obstruct the few remaining practicable locations. Every year adds hundreds of thousands of dollars to the cost of rights-of-way. If these vitally important highways are ever to be secured, immediate steps must be taken toward their protection or acquisition.

[Here the report describes in some detail the seven suggested routes, and points out that existing highways radiating from the principal traffic centers will make these circumferential highways directly accessible not only to the cities along their routes, but to one another. Where such connections do not exist, they will be planned and will become a part of the ultimate comprehensive plan for the future highway system of the region. These seven circumferential routes are but a first step toward such a plan, taken now to meet an immediate and pressing need,] The report concludes:

A Suggestion for Further Procedure

"All seven of the routes here suggested are of sufficient magnitude to be classed as state highways. Certain of them, particularly Route No. 1, are of great national importance and probably should receive national support in their acquisition and construction. Several of them pass through municipalities and will be subject to the special regulations which govern in such cases. All of them, no matter what their larger significance, pass through a great many separate jurisdictions, cities and boroughs, townships, counties, and, in some instances, several states. The only way any of them can be realized is through the full cooperation of all the governmental jurisdictions affected; first, in agreeing upon a definite right-of-way and width, and then on time and method of construction and use and maintenance of roadways. State, county and municipal laws and ordinances will have to be uniformly modified in certain instances to meet the unusual requirements of these backbone highways. For example, in the matter of widths, the state law of Pennsylvania has been interpreted to limit the right-of-way width of state highways to 120 feet. It is conceivable that a highway such as Route No. 1, unique in its economic and military significance, should in certain parts at least be wider than 120 feet and will require such adjustment or interpretation of legislation as will make possible the greater width.

"In the case of each of these roads, no matter how immediate its need, the first step toward realization will be the placing of the route on the official plans of the various jurisdictions within which it falls. This is definitely authorized by law in the state of Pennsylvania, and can be accomplished in effect in New Jersey and Delaware. In actual acquisition of rights-of-way it may be necessary to purchase certain sections, particularly where very small holdings are concerned, but, in general, these several highways will each so enhance the value of property through which it passes that it might reasonably be expected that much of the right-of-way will be acquired through dedication by owners of abutting property.

"The routes here suggested are only approximate. It remains for the several jurisdictions concerned with each of the individual highways to combine in determining exact locations and, to this end, it is suggested that an early step toward realization might well be the creation of committees and the holding of joint meetings of engineers, public officials and interested citizens in various districts along the suggested routes to discuss plans with state and federal representatives and others to decide upon definite lines of action.

"This suggestion and this report are preliminary to more detailed study and more intensive effort, to be undertaken by the Regional Planning Federation working in cooperation with official bodies, automobile clubs, civic, professional and business organizations and all other interested groups or individuals, the support of all of whom is urgently solicited."

Two Reasons for Special Assessments as a Mode of Paying in Part for Public Improvements

THE recapture by the community of some of the values which the community creates is absolutely essential to the financing of city government and city development. The reasons are many.

One sufficient reason is that, as the city grows, the cost of city government and city development increases at a rate greater than the rate of increase of population or the rate of increase of taxable wealth or the rate of increase of business or industry. This is due partly to the intensification at centers of population and traffic, producing extra costs for the construction, maintenance and operation of those centers of intensification.

Another reason is that, as the city grows and spreads, cross-thoroughfares and cross-utilities of all kinds need to be constructed for connecting the various parts of the city, other than the center, with each other. The promoters of a public improvement, such as a new boulevard or other highway, are in the habit of stating that the project is justified because it will increase the land values along it and thereby increase the amounts collected from current property taxes. This argument is never wholly valid. It is seldom, at most, more than partially valid, for as above stated, the increase of costs is at a greater rate than the increase of population or wealth. The increase of current taxes and the increase of taxable property values will never fully pay the costs of growth. Hence the necessity of special assessments.

ALFRED BETTMAN.

Changes in Refuse Collection and Disposal in Akron, Ohio

By HARRISON P. EDDY, JR.
METCALF & EDDY, ENGINEERS, BOSTON, MASS.

AKRON is the leading rubber-tire city in the world. On account of the tremendous expansion in this industry during and immediately after the war, the city had a phenomenal growth, resulting in a population in 1920 of 208,435.

Shortly afterward, as a result of the severe industrial depression, the city suffered an unusual and rapid decrease in population. Various estimates for the low point of the decline indicate that 175,000 persons was about the population in 1921. Since that time, however, the growth has been resumed, until at the present time it is estimated that the population is 218,000.

The area of the city is slightly more than 25 square miles. Its topography is rugged, the variation in elevation between the lower portions and the higher districts being about 300 feet, with much of the city lying at elevation 1,000 above sea-level. There are several broad, high plateaus adjacent to the rivers traversing the city. At many places there are deep ravines and steep hillsides, resulting in grades which affect materially the refuse collection districts and routes.

The manufacture of automobile tires is the chief industry of Akron, although numerous other manufacturing establishments of less magnitude are located within the city. There are no packing-houses, but there is one small rendering-plant and a small soap-works.

Akron is almost exclusively a city of detached houses. There are many two-family houses, but the "three-decker," so common to many eastern cities, is entirely absent, and there are very few apartments at the present time.

Existing Methods of Refuse Collection

At present, garbage is collected weekly in the summer and once every two weeks in the winter, except in the downtown district, where it is collected daily. Throughout the greater part of the city, horse-drawn trailers are used for collection, but in the downtown districts collections are made by a motor truck, and in the outlying residential districts by a light truck. In the districts near the yard of the garbage collection service, the trailers return to the yard and dump their loads into a receiving-bin, from which the garbage is discharged into large motor trucks for transportation to the hog farm. In the districts farther away, the full trailers are left by the curb, later to be picked up by tractors and drawn in trains to the farm.

Rubbish is collected by the municipality only a very few times during the year—in the spring and fall. Shortly before collections are to be made, posters are displayed throughout the neighborhood, stating that rubbish will be collected by the city free of charge if placed on the curb on a certain day. At other times, small private contractors collect ashes and rubbish, charging the individual householder a fee for this service. This fee in some cases is 25 cents per week, for collecting from the cellar. Indications are that this may be about the standard charge. In some cases the charge is 15 or 20 cents a bushel for the removal of ashes. In the case of one small household an entire winter's production of ashes was removed from the back yard for $2.50.

Under the direction of W. F. Peters, former Director of Public Service of Akron, Ohio, Metcalf & Eddy have recently prepared a report dealing with all phases of the problem of collection and disposal of municipal refuse as applied to conditions in Akron. This report is now in the hands of Fred E. Swineford, present Director of Public Service, who, until appointed to his present position by Mayor-Manager G. Lloyd Weil, was Director of Highway Maintenance for the state of Ohio.

Sufficient data are lacking to provide means for estimating the present aggregate cost of non-municipal collection of ashes and rubbish. It is probable, however, that the citizens of Akron, as individuals, are paying at least as much for irregular and unsatisfactory private collection as they would for regular and satisfactory municipal collection.

Existing Methods of Disposal

In 1915 the city built a garbage-reduction plant, which was operated for about four years, first by the city then by a contractor, and later again by the city. The garbage was cooked in digesters, then dried in direct-heat horizontal rotary dryers, after which the grease was extracted in percolators. In 1919 there was a serious explosion, in which three men lost their lives and several others were seriously burned. For a few months following the explosion, the plant was continued in operation for the digestion and drying of the garbage, but grease extraction was not resumed. The tankage thus obtained was disposed of by dumping.

At the end of the year 1919 the city entered into a five-year contract for the sale of all municipally collected garbage for the purpose of feeding to hogs. The city was obliged to make collections twice a week.

Before the contract had run two years the contractor was badly in arrears on his payments to the city, and the city had not made bi-weekly collections at all seasons as it had agreed to do. Thereupon, the city agreed to cancel the debt owed by the contractor in return for the privilege of making less frequent collections.

In 1926, a further contract was entered into, under the terms of which the city was to pay the contractor for disposing of the garbage. This contract was to continue until 1928, but under its terms the city has exercised the option of extending the contract until 1929.

The contractor's hog farm is located near East Liberty, about five miles from the southern city line and nine miles from the yard of the garbage-collection service. The city dumps the garbage on a platform at the piggery. The equipment at the piggery is relatively simple, and the investment is comparatively small. The refuse of the piggery, consisting of manure and uneaten garbage, is used locally as a fertilizer.

Quantity of Refuse

Records are available of the total quantity of garbage collected from 1918 to date. Except for the year 1921, the quantity collected has increased steadily during this period, the total quantity collected in 1926—namely, 17,829 tons—being not far from double that collected in 1918. It is interesting to note that a particularly large increase followed the assumption of the collection service by the city in 1919.

In 1926 an average of 57 tons of garbage was obtained each collection day. This quantity was equivalent to 171 pounds per capita for the year.

Marked daily, weekly and monthly variations in quantity collected occurred, as shown in Table 1.

Since rubbish (that is, waste papers, pasteboard cartons, boxes and miscellaneous discarded objects) is not regularly collected, and since no records of its production are kept, it became necessary to estimate the quantity of this

TABLE I. VARIATION IN QUANTITY OF GARBAGE COLLECTED IN 1926

	Tons Per Day	Percentage of Daily Average for Year
Daily average for year	57.0	100
Maximum four weeks (September 6 to October 2)	97.5	171
Maximum six days (September 20 to 25)	103.5	181
Maximum day (Monday, September 27)	112.6	197

waste from experience elsewhere.

From studies made at Buffalo, Rochester and at other places, it was believed to be reasonable to estimate Akron's production after regular municipal collections shall have been inaugurated at 110 pounds per capita per year. This figure is higher than that which would have been adopted a generation ago, because of the changed customs regarding the employment of individual containers for food and merchandise, and because the average American family is more wasteful and discards more material than formerly.

No data as to the quantity of ashes produced in Akron are available. It was estimated that ash production would amount to 700 pounds per capita per year.

Small dead animals are collected by the garbage collection service and buried near the present sewage treatment plant, the number collected in 1926 being 3,101. Large dead animals are removed and utilized by a rendering company.

House Treatment

While at present the city collects garbage only, a discussion is given of the house treatment of each class of refuse. It is essential to the successful maintenance of neat and sanitary municipal conditions for each householder to fulfill his own obligations with respect to the care of ashes, rubbish and garbage. Furthermore, if the householder cooperates with the municipal authorities, the collection of refuse can be carried out with a minimum of cost and offense and with a maximum of promptness and satisfaction.

Of primary importance is the separate storage on the individual premises of the different classes of refuse. This permits the use of containers of sizes and types best adapted to the materials to be stored. The indiscriminate mixing of waste materials may give rise to offensive, insanitary conditions and to serious fire hazards.

It is not wise to place ashes and combustible refuse in the same household container, because of the serious fire hazard involved. Neither is it desirable to mix garbage and rubbish, because of the increased volume of foul material stored and the increased number of containers to be kept clean.

The mixing of garbage with ashes in a household container is less objectionable than its admixture with rubbish, because the ashes absorb the moisture of the garbage and cover the garbage so as to minimize the escape of odors. The admixture of hot ashes with garbage, however, may result in the escape of offensive odors. Were garbage to be mixed with ashes, some duplication of containers in those houses where no ashes are produced in the summer months might then be necessary in order that the size of the containers used for garbage at this time might be small enough to be kept reasonably clean. A greater disadvantage, especially at times of temporary interruption to the collection service such as are often caused by severe blizzards, is the fact that the quantity of material which should be removed promptly from the household is greatly increased. The chief objection to this practice, however, is that if the mixture is disposed of by filling waste land, the dumps so formed will become infested with flies, rats and other vermin.

Separate household storage of the three classes of refuse was recommended. Drainage of garbage before placing it in the pail decreases the weight of the material to be disposed of and also delays its putrefaction. Wrapping of garbage in old newspapers or other waste paper is another sanitary safeguard. Although wrapping increases the bulk to be dealt with, the objection is offset in a measure by the decrease in its moisture and in the offensiveness of the material to be stored and transported. The report recommends that Akron adopt the practice of wrapping garbage and that all householders be instructed in this regard.

The report gives a discussion and recommendations of the size, type and material for household containers for each class of refuse and their location and use. It also gives simple regulations and instructions applicable to Akron for the house treatment of refuse, to be printed on cards and distributed to all householders.

Methods of Collection

At present, collection of garbage is made from the rear of the houses, and it is advisable in Akron to continue this practice. In some cities the householder is required to place his garbage pail at the curb line by a certain time on collection days. This practice may result in some saving of time and cost of collection if schedules can be maintained and if the householder invariably conforms to the regulations, but there are serious objections to this practice. Rows of garbage pails along the curb, some of them often tipped over with contents spilled, give the streets an unsightly and untidy appearance. Since garbage collectors start work very early in the morning, those householders living along the first part of the routes must place their pails at the curb the night before. Many householders will fail to place their pails on the curb in time for collection, in which case they should be obliged to return them to the backyard. If this is not done the pails may remain on the sidewalk until the next collection day. In either event there will be an accumulation of garbage, with the possibility of insanitary conditions, or else the collection service will be put to additional expense for returning and picking up uncollected garbage at numerous scattered points. After collection has been made, empty containers often remain at the curb for the balance of the day. Furthermore, a great many householders object to carrying their garbage pails to the curb and would prefer to pay the additional cost of having collection made from the rear of the houses by the city. From the standpoint of sanitation and attractive appearance of Akron's residential and business streets, the expense of making collection from the rear of the houses is easily justified.

In some cities the municipal collection service takes rubbish and ashes from the rear of the houses, places them at the curb immediately prior to the arrival of the collection vehicle, and after loading into the vehicle returns the empty containers to the rear of the houses. Generally, it is not wise for the city service to enter dwellings to collect refuse. If the householder carries his rubbish and ashes outdoors from the cellar, he has already performed in most cases the hardest part of the work. In the case of Akron, it was recommended that the householder be required to carry the rubbish to the curb prior to the arrival of the collection vehicle.

Separate and Mixed Collection

Collection of municipal refuse may be divided into two classes—namely, separate and mixed. Separate collection, as the name implies, requires household storage in separate containers and independent collection of the different types of refuse.

This method has the advantage that a much smaller bulk of offensive material accumulates in periods of interrupted service, such as occasionally occur. After such interruptions, concentrated effort upon the separate collection of garbage alone is much more effective than if a much larger accumulation of mixed refuse has to be collected. Separate collection permits the use of the type of vehicle best adapted to the collection and transportation of each kind of refuse.

It is therefore proposed to make separate collections in Akron. Under this plan, garbage will be collected from residences twice a week in summer and once

a week in winter. From the downtown district, including markets, collections will be made six times a week, as at present. Rubbish will be collected once a week from residences throughout the year, and six times a week from the downtown district. Ashes will be collected from residences once a week in winter and once every two weeks in summer, and from the business district six times a week throughout the year.

Collection Vehicles

There are in general use throughout the country at the present time three types of vehicles for refuse collection; namely, horse-drawn wagons, motor trucks, and trailers drawn by horses during collection and picked up, when loaded, by motor tractor-trucks, for hauling in trains of several trailers to the point of disposal.

After detailed cost estimates had been prepared for collection of each type of refuse in each of the three above-mentioned types of vehicles, and after consideration of economy and questions of sanitation and public convenience, it was recommended that Akron adopt for garbage collection two-horse wagons; for rubbish collection, motor trucks, and for ashes, tractors and trailers, except in the downtown district. In the downtown district it is planned to collect garbage, rubbish and ashes by means of fast-moving motor trucks, adequately manned so that collection can be made with dispatch and completed by eight o'clock in the morning on the principal business and shopping thoroughfare. Outlying markets, fruit stands, restaurants and factory lunch rooms will be given daily garbage collection, to be made by light motor trucks.

Large-scale colored maps show in detail the individual districts for summer and winter collection of each type of refuse. Organization charts show the personnel and equipment required both for operation and maintenance.

Complaints

Complaints should be made by telephone to the Department of Public Service. Each complaint should be investigated immediately by an inspector in order to determine its justification. In the garbage collection service there should be two inspectors, each provided with an automobile. They should report each hour by telephone to the office and receive a list of complaints in their district. Valid complaints should be remedied promptly. Special light trucks should be used for this service.

Causes of invalid complaints should be brought to the attention of the householder in a courteous but firm manner, first by the inspector, and, if repeated, by the superintendent of the service.

In many cases where complaints are made, the householder is at fault. Inadequate and improper containers are frequent causes of difficulty. Failure to place rubbish and ashes at the curb at the proper time is another frequent cause of complaint. In order to minimize improper complaints, the city should refuse to make collections when its regulations are not complied with.

Records of complaints should be kept for the purpose of checking up the efficiency of the different collectors, and these records should be seriously considered by the superintendent every week.

If the entire service of complaint-handling is performed with courtesy and dispatch, public cooperation and cordial relations will be fostered.

Methods of Disposal

The report outlines at some length the various methods of refuse disposal, and recommends the rejection of filling except for ashes and street sweepings, salvage, hog feeding, and all miscellaneous processes, such as the distillation of garbage and the recovery of alcohol, gas, charcoal and tar products, as has been carried out experimently at Columbus and at Greenwich, Conn., and on a larger scale in England; the fermentation method known as the Becarri process, in which ammonium sulphate and humus are produced, and digestion with sewage sludge.

It is proposed to dispose of clean ashes, street sweepings, and non-combustible rubbish by filling low land. Three dumps are to be in service in different sections of the city, to reduce the length of haul. Each dump will be maintained in condition by one man, using a crawler tractor with bulldozer.

Hog Feeding

While if properly carried out under suitable conditions the disposal of garbage by feeding to hogs may be a satisfactory method, it often has several distinct disadvantages and objections.

Insanitary conditions are frequently created, bringing about aerial nuisances. Where such nuisances have become sufficiently obnoxious, injunction proceedings by aggrieved property owners have seriously embarrassed the operation of piggeries. The location of piggeries is usually so remote as to involve long-haul transportation problems and sometimes injunctions or, threatened injunctions to restrain transportation through other municipalities.

Should epidemics of hoof and mouth disease, hog cholera, or tuberculosis occur, the whole process of garbage disposal would be interrupted, although protective inoculations from the common diseases aid in reducing this hazard.

Feeding garbage to hogs is a method of reducing the volume of an offensive material, but it is not a process of complete disposal. In case it is necessary to provide for disposal of the piggery refuse, which is approximately one-half the weight of the raw garbage, by reduction or incineration, the advantage of low cost is lost. In any event this material must be disposed of in an inoffensive manner.

Reduction of Garbage

In general, the process of reduction consists of cooking the garbage for a number of hours under steam pressure, after which the water and grease are removed and the solid matter dried. The grease is separated and used generally for soap making, and the dry material, called "tankage," is used as a base for fertilizers. Considerable grease remains in the tankage after cooking, and this usually is extracted with a solvent such as gasoline. In some processes the material is not cooked but is dried by direct heat or steam in steel drums, and the grease is recovered by extraction.

In the report the practical methods of reduction are described at length, followed by a consideration of the questions of patents and royalties, general sanitation and odors, explosion and fire hazard, by-product recovery, and the uncertainties attendant upon the future of the tankage market. In describing the conversion of tankage into stock feed, it is pointed out that although a high price is obtained for the portion of the tankage sold as feed, the revenue from the grease remaining in this feed is lost. Consequently, the relatively high price obtained from the stock feed does not necessarily indicate that production of feed brings a greater total revenue than the production of ordinary tankage and a larger quantity of grease.

Incineration

While garbage will burn after its moisture has been driven off, it has not sufficient heat value of itself to evaporate its moisture, to actively and continuously support combustion, and to maintain at all times a satisfactorily high temperature. Municipal rubbish generally makes a satisfactory and economical fuel to facilitate the combustion of garbage.

In the report, methods of incineration are described, with a discussion of the patent situation, general sanitation, odors and smoke and utilization of by-products.

Projects Considered for Disposal of Garbage and Rubbish

Detailed consideration is given to two projects for the disposal of garbage and rubbish: first, the reduction of garbage and the separate incineration of rubbish; and, second, the incineration of mixed refuse, that is, garbage and rubbish together.

While the first cost of project I greatly

exceeds that of project II, the saving in net operating cost results in lower total annual charges, including interest and amortization of bonds by project I, assuming normal grease and tankage markets. However, after a detailed comparison of these projects the conclusion has been reached that under the Akron conditions incineration of mixed refuse should be adopted by the city as the approved method.

In the field, consideration was given to many disposal sites, and in the collection studies the cost of transportation to the more favorable ones was estimated. As a result of these studies, a single site was recommended, the saving in transportation due to shorter haul to two or more sites not being sufficient to justify setting aside more than one site for disposal purposes.

The Psychology of City Parks

By ERNEST McGAFFEY

A CITY park is usually an artificial effort to copy nature, and to bring into urban surroundings a semblance of the real outdoors of cloistered environment. Occasionally, as at Forest Park in St. Louis, it is the segregating of a tract of woodland and meadow which has never been scarred by the plow, and leaving it in its pristine state of rural landscape. Sometimes, as in Boston Common, a park may be the repository of thrilling historic memories, vital to the life of a nation. Other parks, such as Central Park in New York City and Lincoln Park in Chicago, may hold characteristic embellishments of ancient or modern art, such as Cleopatra's Needle in the one and St. Gaudens' statue of Lincoln in the other. Fairmount Park in Philadelphia, Golden Gate Park in San Francisco, and scores of others, have exceptional individuality, charm, and uniqueness.

Generally speaking, however, the parks of a city are the safety-valves to the overwrought nerves of its matured people, serving a different need from that met for the boys and girls by the playgrounds and recreational centers. More than ever, in these super-strenuous times of a keyed-up modern civilization, do the city parks occupy an important place in the economy of nervous energy, in the quieting of the over-accelerated pulses of the average men and women of today.

Rest and relaxation, such as is most sorely needed by the brain-lashed and muscle-weary, are not found in the excitement of baseball, football, sparring matches or automobile races, nor in the tedium or exaggerations of the movies. More simply, but none the less effectively, are they found in the contemplation of nature—even in the viewing of an imitation nature, if you like—where green grass, cultivated flowers, the friendly salutation of waving branches, the flash of leaping fountains, the shimmer of sunlight on placid waters, and the flash of a bird's wing may lend a vision of the great outdoors.

"The comfort of wide fields unto tired eyes" was the theme of one singer of the outdoors; and "I loaf and invite my soul" was the true thought of another singer. Both men were right. It is occasionally a trifle pathetic to see numbers of men and women in the city parks who cannot well afford trips to the country, walking along the shaded paths, sitting on benches beside the quiet lakes, and following with relaxed tension of nerves the swaying of leaf-laden twigs in the passing breezes. They are sensing, dreamily, yet happily, the myriad messages written in the book of nature. However the echoes and pictures may fall short of the actual, the repose and beauty of the parks is undeniable, and the reaction both comforting and stimulating. As tennis, baseball, croquet, bowling on the green, boating, canoeing, and other amusements give an outlet to the younger and more active, so the contemplation of foliage, flowers, shrubbery, lawns and lakes gives joy and a feeling of restful peace to those who come only there to dream—or forget.

EDITORIAL NOTE.—To the author of the foregoing article, whose home is in Los Angeles, THE AMERICAN CITY is indebted for the views of Southern California parks shown on the front page of this issue.

Home Care, Rather Than Institutional Care, for Dependent Children

EVER since the White House Conference on Child Welfare, called by President Roosevelt about twenty years ago, enlightened public opinion has been turning toward home care for dependent children, rather than institutional care. The "fourteen points" outlined at that Conference were much the same, in principle, as the points made by the speakers at the conference of the Child Welfare Committee of America, held in New York, February 20-22, 1928.

The main contention of the speakers was that the normal dependent child should be cared for in an individual home instead of in an institution; preferably in his own home, if that is found to be at all a suitable one, and in a foster-home as the next best solution of the problem. Mothers' pension bills, now operative in 42 states, have made it possible for a great many destitute children to be cared for by their own mothers. And the tendency to put children in foster-homes, rather than in institutions, has been steadily growing.

That Miss Sophie Irene Loeb, backed by the society of which she is president, has proved a doughty champion of the cause which she sponsors is unquestioned. Perhaps no authority upon child welfare today would deny the objections made at this conference to institutional care, and the advantages brought forward in favor of home care. The child's basic need of love, of knowing himself a part of a family and of a community, of being fitted by normal contacts to take his place in society—these are among the acknowledged advantages of home rearing.

Yet, as Prof. Henry W. Thurston pointed out at this conference, the need, in connection with home care for dependent children, is to set up machinery whereby it may be determined whether any child should be kept in his own home, sent to a foster-home, or committed to an institution. The suggestion was a pertinent one, because in every change of tide in public opinion the danger is that the accumulations of past experience may be swept away. C. C. Carstens, another leading authority on child welfare, but who was not present, recently pointed out the part which institutions should play in the care of the dependent children.

According to Mr. Carstens, institutions are needed, not only for the abnormal child, but as reception and training centers, fitting the child for his home placement, and cooperating in finding for him a home fitted to his individual needs. The dangers of adoption, except under the most skilled and painstaking supervision, are evident and have often been pointed out; the danger of going too fast in the home placement of the dependent child is one which has but recently arisen. Yet the need of making a discriminating adjustment of the child to the home is a basic one.

Among the peaks of interest at the conference were the decorating of a Boy Scout for saving a younger child from drowning; the address by Katherine Mayo, author of "Mother India"; and that by Governor Smith, given at the home of Dr. John A. Harriss, James E. West, Chief Scout Executive of America, pinned the medal on the breast of little Jack Campbell; Miss Mayo traced the worst of the evils her book describes to the custom of child marriages, and Governor Smith, with characteristic force, asked whether the Empire State, while conserving her water-power, cattle and pigs, should fail that most precious of all her assets—her children.

VIRGINIA T. YEAMAN.

Municipal Hydro-Electric System at Kaukauna, Wis., Expands

By H. K. DERUS

WITH two water-power installations totaling 7,100 horsepower, and generator capacity of 5,000 kilovolt-amperes, together with connection arrangements for 8,000 kva. of purchased power, Kaukauna has under construction a third plant that will add another 4,500 kva. to the capacity of the municipal electric system.

Situated in the heart of the paper-making district in the Fox River Valley, Kaukauna is built upon both sides of the river, which is famous for its scenery and tourist-attracting power. In addition to its beauty, the river has another important feature in that a fall of 52 feet occurs within the city limits, which provides 30,000 developed and undeveloped horsepower.

In 1911 the people of Kaukauna, dissatisfied with the electric service they had been receiving, at rates considered exorbitant, from the Kaukauna Gas & Electric Co., decided at an election to purchase the electric plant and operate it as a municipal undertaking. A bond issue of $50,000 covering the entire purchase price was voted and the plant was taken over by the city on January 1, 1912. Another issue, of $6,000, was voted in 1912 for improvements. Today the system has a value of $427,152; the difference between this figure and the two bond issues of $56,000 represents the additions that have been made to it out of its earnings. It has an additional investment of $204,327 in the municipal building and other real estate, paid for out of earnings.

The rates for lighting are from 8c per kwh. down to 4½c; for cooking they range from 3c to 2c; for water heating the charge is $5.00 per month per kw. installed; while for power the rates are from 6c down to 7½ mills per kwh. The average rate for all current in Kaukauna is 1.0679c, which the city officials maintain is the lowest average rate in the United States.

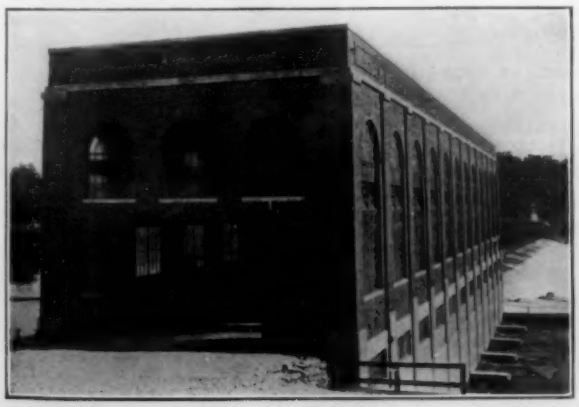
The story of the electrical department under the city management is one of continued progress. Up to 1917 the production for any one year had not been over 750,000 kwh., but in 1917 it leaped to 2,200,000 kwh. In the next year a tremendous jump placed the production at 10,200,000 kwh. From then on, the increases amounted to about 2,000,000 kwh. per year, and in 1926 the production exceeded 30,000,000 kwh. An incidental benefit to the city was the increasing amount of employment provided by the system. In 1912, the first year of municipal ownership, the payroll was about $7,000; in 1917 it was $10,000, in 1919, $24,500, while last year it exceeded $57,000. The kwh. production per employee has increased tremendously.

In 1915 the city leased the Badger plant of the Green Bay & Mississippi Canal Co. which had been idle since 1907. Although all of the additional power was not needed at once, it was taken into the line gradually and by 1918 the entire capacity was being used. There are now 3,300 hp. in this plant, with generating capacity of 2,000 kva.

After taking over the Badger plant the growing demand caused a need for still more producing capacity, and so, after many years of research and delays, a new plant was built and placed in service in 1926, at Rapide Croche, on the Fox River several miles below the city. It has a capacity of 3,000 kva. Even with the addition of this plant, the demand has been such as to necessitate the purchase of power from companies that produce by steam at greater cost. Another new plant, of 4,500 kva., capacity and costing about $300,000 at present prices, is now under construction.

The new plant will supersede the Badger plant as the distribution point. It will contain two 2,250-kva. General Electric generators direct-connected to two S. Morgan Smith fixed-blade propeller type runners operating under 24-foot head. The two 1,000-kva. G. E. generators in the old plant will be direct-connected to new horizontal S. Morgan Smith turbines for 24-foot head, and will be held for reserve operation by remote control. The Rapide Croche plant, with four 750-kva., 2,300-v. Allis-Chalmers generators, direct-connected to Allis-Chalmers adjustable-blade propeller type runners, under 8½-foot head, is automatic; one resident operator cares for the plant.

Several years ago the utility had built up a reserve fund for the purpose of constructing a building to be devoted entirely to municipal purposes. The structure that resulted stands today as one of the finest in the city, housing the fire and police departments, city hall and offices, vocational school, electrical and water department offices, a municipal swimming pool and the post office. The electrical department also purchased land to be used as an athletic field for the high school, bought a new fire-truck, and furniture and equipment for the municipal building, and paid $26,000 as a share of the cost of a new bridge completed last year across the Fox River—



RAPIDE CROCHE HYDRO-ELECTRIC PLANT OF KAUKAUNA, WIS., MUNICIPAL ELECTRIC SYSTEM

KAUKAUNA MUNICIPAL BUILDING CONSTRUCTED OUT OF EARNINGS OF CITY'S ELECTRIC PLANTS

making a total of $685,721 for plant, municipal building and other improvements.

In addition to furnishing electricity for home and commercial use in the city, the Department also supplies many smaller villages in the vicinity. The area served by the Department has a population of 8,500.

Consumers total 2,854, or 33.58 in every hundred of population. This means that the Department is serving every family in the territory even if each family has an average of only three members. It can easily be seen, therefore, that any development the plant might make in the future will be in the commercial field and to farmers.

Many years ago the little village, with a population of scarcely 4,000, was famed because of its water-power facilities. These possibilities are much more pronounced now, for although in former years it was necessary to bring industry to the water-power site, it is now possible, under modern electric power transmission and distribution, to locate an industry at the most convenient and available site and transmit the power generated to that place.

The department furnished every industry in the city with electric power for operation with the exception of one, and managers of that plant are seriously considering a contract with the city. Because the city was able to furnish power at a reasonable rate, at least one industry in the city was saved from failure. Water-power was expensive, keen competition made the profit low, and one mill was about to shut down; but under a contract with the city it is now in operation, is financially sound, and furnishes employment to many residents. This example demonstrates the good the Department is doing in Kaukauna.

In discussing the question of rural expansion, J. O. Posson, who has held the position of General Manager for the last ten years, said:

"The benefit of getting electrical service to the farmer is so obvious that discussion is hardly necessary. It will bring even more advantage to the farmer than to the city dweller because rural life has more hardships and toil that may be lessened by its use. Electricity is man's greatest and most dependable service, and agriculture is man's oldest occupation but the last to receive the benefits of the great invention.

"At first the benefits of electricity were confined to larger cities, but gradually improvements enabled the service to be extended to the suburbs and smaller communities. The financial problem is the biggest in extending electricity to the farms. The cost must be lowered sufficiently so that the farmer can pay on a basis equal to that of city consumption.

"Some students of rural electric service problems think it sufficient to make the cities pay the service costs. They argue that furnishing electricity is similar to building highways, a cost in which everyone should share. I do not believe in this theory. I believe the city should assume a part of the cost of completing the great experiment, that of solving the problem of bringing electricity to the farm at a price the farmer can afford to pay. This our Department is attempting to do.

"During the past year 30 miles of lines serving a district containing about 125 farms on a basis of remuneration below actual cost, were constructed. We expect the city will benefit through additional business done here because we serve these farms."

Roads and Charities Absorb More Than Half of County Expenditures

THE comparative statistics for Ohio counties during 1926, recently published in booklet form by the Auditor of State at Columbus, show the division of expenditures given in the table and in the accompanying diagram. All expenditures of the 88 counties, including operation, maintenance and outlay, are included. The counties having no legislative function, all expenditures are for executive and judicial purposes.

No public industries, such as waterworks, markets, scales, etc., are operated by the county governments in state of Ohio.

Appraising Property	$1,408,971.85	2%
General executive	6,222,360.85	8
Judicial	2,555,385.19	3
Sheriff	784,466.37	1
Correctional	1,152,096.93	1
Agricultural	584,241.01	1
Charity	9,054,027.49	11
Engineering	2,419,745.50	4
Roads	34,427,251.52	43
Bridges and culverts	3,365,677.85	4
Ditches	720,552.05	1
Sanitary sewers and water	5,535,530.18	7
Buildings and lands	4,236,352.65	5
Soldiers' relief	544,230.75	1
Miscellaneous	790,070.41	1
Interest	5,716,338.45	7
Total cost	$79,521,199.05	100%

THE AVERAGE DOLLAR SPENT IN THE 88 COUNTIES OF OHIO
Proportionate part of the $79,521,199.05 used for each purpose

The City Planning Commission as the Hub of the Municipal Wheel

WITH park, playground, health, public service, and many more commissions, the question "Why another?" will not down. The answer is: No one of these has authority beyond its own field or to correlate its own problems with any broadly outlined scheme for general welfare, a term which is the American equivalent of the English word "amenities." Furthermore, the present tangle of organization by departments encourages jealousy and a pernicious spirit of special preference in absolute disregard of communal interests; and, besides, it leaves *"twilight zones"* where none is operative. A City Planning Commission animated by the spirit, *correlation of all for the good of all*, will become the hub of the wheel, enabling the municipal coach to run rhythmically on the broad tires of altruism.

—From "Landscape Architecture," by Stephen Child (Chapter L "Of City Planning.")

Surface Treatment of Roads—Need, Methods and Costs

By C. N. CONNER

CHAIRMAN, LOW COST IMPROVED ROADS INVESTIGATION COMMITTEE, HIGHWAY RESEARCH BOARD

LOOKING back a number of years, we find that high-type pavements have met the needs of thickly populated communities. During this time many rural sections have not been as fortunate. In fact, it was not until after 1920 that appreciable mileages of low-cost improved roads began to appear. These untreated surfaces were not expected to carry heavy traffic, but with improved methods of maintenance, reconstruction, betterment and new construction, highway engineers have rapidly extended road service to these rural sections. The results of their efforts have been effective, but they have not kept pace with the ever-mounting vehicle registration.

Surface Treatment

There are two principal classes of surface treatments—bituminous and non-bituminous. Some non-bituminous surface treatments have been used successfully in certain localities. The degree of success varies considerably with climatic conditions. Bituminous treatments are adaptable to varying conditions in climate and aggregate. Besides laying dust and preventing loss of binder, they have a definite salvage value from year to year.

As a result of very little research, some experiments, and with a large amount of usage, three principal methods of bituminous surface treatment have been developed. They are (1) the skin surface treatment or penetration method, hot or cold; (2) the mixed-in-place treatment, cold; (3) the pre-mixed method, hot or cold. Each of these principal methods has its advocates and is subject to variations in the classes of bitumen and aggregates used.

Skin Surface Treatment or Penetration Method

This method is generally used on well-compacted dense bases which do not have a loose surface.

Materials.—The bituminous materials are a cold bitumen for the first or prime coat, generally a coal tar, a cut-back asphalt, or low-viscosity road oil. The second application may be a second prime coat of the same bitumen. The seal coat is generally a heavier bitumen, such as a hot asphalt, hot tar, a cold cut-back asphalt, or a heavy road oil. The aggregates for cover material range all the way from a coarse, clean sand to ¾-inch stone or slag. The cover material should be hard and durable.

Construction.—This consists of (1) cleaning the base; (2) the application of a prime coat of low-viscosity bitumen; (3) 10 hours to several days to allow penetration. (4) A second prime coat of the same bitumen may be advisable for the more porous bases. (5) A light cover may or may not be used with the prime coat—better penetration results when it is not used, as the cover takes up some of the bitumen; traffic requirements may make the cover necessary. (6) and (7) The last application is of the heavier bitumen and cover of sand, gravel, stone or slag. The so-called inverted penetration method means that the bitumen is applied before the final cover. The inverted method is the more common practice. (8) The surface thus formed may or may not be rolled. The best practice calls for rolling with a light or heavy power roller. A heavy roller should not be used on a relatively soft aggregate. (9) Seal coats or a third application are sometimes used to seal the surface if open or to build up a greater thickness.

Maintenance Methods.—These include retreatment, patching, scarifying, reshaping and retreating of the original surface treatment.

Costs.—The cost of the first year's treatment will be considered as the original cost. This will naturally vary with the cost and class of materials used. Asphalts generally cost less than tars. Cut-back asphalts cost more than road oils. Sand for cover costs less than stone. Annual scarifying, reshaping and retreatment may add to the maintenance cost, but a smoother riding surface is obtained than when a large number of small patches are used. The skin surface treatment for the first year, as described above, will cost from $1,000 to $2,500 per mile for 18-foot widths. The annual maintenance cost is subject to many variables in climate, materials, base, traffic, thoroughness and intelligence of maintenance. When serving within its traffic capacity, the annual surface maintenance cost does not exceed $1,000 per year under unfavorable weather conditions. Under favorable weather conditions and with excellent bases the maintenance cost will not exceed $500.

Service.—The traffic capacity of this type under favorable conditions of base and climate is probably 2,000 vehicles per day without excessive maintenance. Higher capacities have been reported. A fair average traffic capacity of gravels and good sand-clay is from 800 to 1,500 automobiles and light trucks. A higher limit may be reached on lime rock or stone macadam bases. Examples of this type of service may be found in use from Maine to Florida, in California and Oregon, and in portions of the Middle West.

3,000,000 Miles to Be Surfaced

Pyke Johnson says that there are 22,000,000 motor vehicles in use in the United States, of which 87 per cent are passenger cars, 12.6 per cent trucks, and 0.4 per cent busses. The task for the road builders is to give them highways to roll over. Our total road mileage is about 3,000,000, of which 85 per cent is unsurfaced, 10 per cent is a low-type surfacing such as untreated sand-clay, gravel and stone, 4 per cent an intermediate type, and less than 2 per cent high-type surfaces. These figures indicate that a high percentage of our roads will need some type of surfacing or surface treatment within the next few years if the now isolated sections are to have service.

The Mixed-in-Place Method Cold

This is a method which is new within three or four years. Its purpose is to consolidate the existing loose or unstable aggregates by mixing them on the road with bitumen. Surfaces containing such aggregates as crushed or screened gravel, stone and sand-clay or sand-loam have been thus improved.

Materials.—Either asphalt or tar has been used as bitumen. In a few instances both have been used. They range all the way from fuel oil of high asphaltic content such as used in California to cut-back asphalt in North and South Carolina and tars in Wisconsin. The bitumen should be such that it will not become sticky or "set up" until sufficient time has elapsed for the necessary manipulation of the mixture. The road oils which do not contain a solvent set up more slowly than the cut-back asphalts. They also leave a more plastic mixture. The surfaces which contain such aggregates as crushed or screened gravel and crushed stone have generally been selected for treatment. There is evidence, however, that poorer materials such as sand-clay may be thus sufficient-

ly stabilized and the traffic capacity thereby increased.

Construction.—The methods of construction are briefly listed below. They are subject to some variations in different parts of the country. (1) Smooth the existing surface. (2) Scarify if necessary, harrow, machine and shape. (3) Apply first coat of cold bitumen and mix with harrow and road machine blade. Sometimes harrowing is omitted; blading is seldom omitted. (4) Apply second coat of bitumen and mix thoroughly. (5) Sometimes a third coat is applied, followed by more mixing. (6) Mixing is continued until a uniform color results. (7) Following the final shaping with a road blade or drag, the surface preferably is rolled for final compaction with a power roller. Some engineers secure compaction by traffic. (9) A seal coat may be used if needed. An open surface may indicate this necessity or a lean base may be the indication.

Maintenance Methods.—These surfaces are built as thin as about one inch and as thick as three inches. Maintenance methods may include seal coats or patching with a mixture of aggregate and bitumen. If the original mixture was too lean, a remixing with more bitumen may be indicated; if too rich, a remixing with more aggregate may be the solution.

Costs.—For an 18-foot width of treatment the cost will range from $700 or $1,200 per mile to $5,000 or $6,000. The class of bitumen used, as well as the depth of treatment, will affect the cost. Most of the surfacing has been on gravel and stone roads. The first costs for these have averaged less than $2,000 per mile.

Service.—Some of these surfaces are carrying a counted traffic of between 1,000 and 2,000 vehicles per day without signs of serious fatigue. The surfaces are smooth and comfortable to ride upon, much smoother than the average skin surface treatment or rolled hot top. The mixed-in-place surfaces may be built without serious interruption to traffic and the inconvenience of heating operations. This type of surfacing may be seen in service, but with some variations in methods of construction, in California, Wisconsin, Indiana, Tennessee, and North and South Carolina. Although the sand-oil roads in Long Island are a mixture of fine gravel, sand and loam with a slow-curing oil, the foregoing methods of construction do not apply so closely to them. The construction and maintenance operations eventually build up a mixed-in-place surface after two or three years.

The Pre-Mixed Method, Hot or Cold

This class of surface treatment is, in reality, a thin surface course, as we have been accustomed to consider our wearing courses, such as bituminous concrete and sheet asphalt. By laying them thinner than standard practice or by using local materials, it is expected to secure a surface whose first cost is less than $12,000 or $15,000 per mile. Included in this classification are such hot mixes as sheet asphalt and bituminous concrete of the fine and coarse aggregate types. The laid-cold surfaces are cold patch bitumens, cut-back asphalts and road oils premixed with aggregates. Natural rock asphalts are a competing material within certain freight zones. They may also be classed as pre-mixed cold surfaces.

Materials.—For the hot mixtures, standard specifications describe suitable bitumens and aggregates. The cold mixtures for surfacing are newer. Specifications for them are not as well standardized as a whole. Specifications for Amiesite and cold patch mixtures which may be used for surfacing are available, as are also those for Uvalde rock asphalt, Alabama rock asphalt and Kyrock. Some experimentation and a little usage indicate that there is a possibility of producing an "unnatural" or synthetic rock asphalt, that is, one which may have many of the characteristics of the sand rock asphalt.

Construction.—If the applied surface mixture is to be less than about 1½ inches in thickness and the base is porous or semi-porous, then a prime coat of suitable cold asphalt or tar is recommended. A binder course of black base or a thin course of penetrated stone will add to the stability and assist in keying the top to the base. In one state, Michigan, both the prime coat and the binder course are used on gravel base. The top course is a stone-filled sheet asphalt or fine aggregate type. The construction of the top itself varies very little from standard methods as found in the specifications published by the Asphalt Association. They include proper dumping, spreading, raking, patching and rolling. Final compaction by rolling must be secured in less time for the hot mixes than for the cold.

Maintenance Methods.—This class of surface treatment is generally maintained by patching with the same material as in the surface or by cold patch mixes.

Costs.—The aim in this class of surfacing is to secure a top which will cost less than $1 per square yard or about $10,000 per mile of 18-foot width. Rock asphalt has been laid in Texas ½-inch deep at $3,700 per mile, 1-inch deep for $5,400, including a prime coat of oil. In Michigan a prime coat of tar, a light binder course and a 2-inch Topeka top is costing around $13,000 per mile. Some work in Georgia using about 2 inches of penetrated stone and about ¾-inch sheet top costs approximately $12,000. When local materials may be used as aggregates, the costs have been considerably reduced for the hot mixes. There are few cost or usage data available for hot or cold pre-mixed surfaces 1 inch and less in thickness. Here and there are isolated sections, but Texas seems to have the largest mileage of thin pre-mixed surface treatment.

Service.—The traffic capacity of these types on natural bases has been estimated and counted as between 1,000 to 2,000 vehicles per day. Some are carrying more. This type of surfacing is not as smooth to ride over as the mixed-in-place surfaces. The cold mixes have some apparent advantages over hot mixes. This advantage is apparent principally during the construction period. There is less interruption to traffic, less expensive equipment is required, and cost of plant operation is reduced.

Summary

As a summary of the surface treatment situation based on observations and usage and a study of present practice and conditions, it appears (1) that surface treatments should not be less than 18 or 20 feet in width, and preferably from shoulder to shoulder; (2) that flat crowns of ⅜- to ½-inch to the foot are sufficient for drainage; flat crowns add to the comfort and safety of automobile travel; (3) that a cold prime coat of bitumen should precede a bitumen surface treatment on a compacted base; (4) that a hot or cold treatment may be used on a final application; (5) that a surface treatment method which includes grading is smoother riding than one which is rolled only; (6) that cold surface treatments of the mixed-in-place and pre-mixed methods offer a wide field for immediate and future business; (7) that there is a need for standardization of names for surface treatments and of specifications for materials, tests and methods of construction.

ACKNOWLEDGMENT.—Abstract of a paper presented before the Sixth Annual Asphalt Paving Conference at Atlanta, Ga.

South American City Guides Youth in Choice of Vocations

BUENOS AIRES has a Bureau of Vocational Guidance which is probably the first of its kind in South America, according to the United States Children's Bureau bulletin, *The World's Children*. It aims to direct students in their choice of work, and also to train vocational guidance experts. "It bases its advice on the school record and physical and mental examination of the applicant, and the general economic situation of the country." One of the ends which it keeps in view is cooperation with employers and labor groups for better directing young people away from occupations that are overcrowded.

Comments on the Various Methods of Governing Parks

By L. H. WEIR
PLAYGROUND AND RECREATION ASSOCIATION OF AMERICA

1. *Government by council or committee of council.*—In villages, small towns and cities possessing only a few park properties this method of government may be adequate, but in communities of any size initiating a plan for a definitely organized park service the method has a number of drawbacks, among them the following: (*a*) There can be little permanency of plan or policy, since most city councils are liable to change every two years; at the most, every four years. (*b*) The executive organization is likely to be uncertain, since the executive officer is not sure of his tenure of office if the majority of a new council are new members. It would be difficult to interest trained executives to accept service in park departments under such conditions. (*c*) With many different functions to engage their attention, the council has a divided interest, with the result that parks are not likely to receive the attention necessary to a continuous carrying forward of plans. (*d*) This form of government is open to abuse of political power, especially in the appointment of park employees.

2. *Government by a commissioner in a commission-governed city.*—The commission form of government is acknowledged to have many points of merit over the old ward system of municipal government. In the administration of parks some of its advantages are as follows: (*a*) It fixes definite responsibility on a single individual so that the citizens may know where the responsibility for efficiency or inefficiency lies. (*b*) It provides for direct administrative and executive action, although in point of fact the city commission as a whole concerns itself with governmental policies and plans, so that the commissioner having charge of parks and recreation does not have an entirely free hand. (*c*) It is presumed to be more economical for the reason that certain functional activities of a park department are handled by other executive departments of the city, thus preventing duplication of executive machinery.

On the other hand, the plan has certain undesirable effects in relation to the government of parks. (*a*) While there are, of course, examples of a commissioner being re-elected period after period because of efficient service, there is no assurance that a commissioner whose tenure of office is from two to four years will be re-elected or that his successor will carry out his policies. Hence it is exceedingly difficult to follow a specific plan through a long term of years. (*b*) It is improbable that a commissioner will be elected who has any technical knowledge of park functions, although he becomes the chief executive officer of the department. Hence, a trained park executive will find himself under the executive control and direction of an untrained superior official. Moreover, his tenure of office will be very uncertain, since a new commissioner will desire to appoint his own executive staff. In some commission-governed cities the commissioners are elected at large and do not stand for specific positions in the city government, the assignment being made after election. Very often, therefore, people have no way of judging qualifications of the commissioner who will have charge of parks. In some cities, on the other hand, specific positions are announced by the candidates. (*c*) In practically all commission-governed cities the commissioner in charge of parks has many other duties and responsibilities. Under such conditions it is next to impossible to develop and carry out any comprehensive, adequate community-wide system of parks. (*d*) It often happens that the commissioner elected does not have influence enough to focus public opinion sufficiently to carry out any comprehensive plan for parks, or because of the short tenure of office or other causes cannot conduct an adequate educational campaign. (*e*) The administration of parks is primarily a social service function and the governmental performances involved are quite different from those entering into municipal functions primarily fiscal in nature, such as water, light, and sewage disposal. It is unwise in the long run to intrust to a single individual, especially to an official with other functions to perform, a responsibility so varied in its nature as a park system.

3. *Federal plan of municipal government.*—What has been said about the merits and demerits of the government of parks by a commissioner applies equally to their government under the modified form of the commission government plan known as the federal plan. There is, however, this vital difference: the mayor can, if he wishes, appoint a trained director or commissioner in charge of the department of parks—a condition that rarely prevails under the elective system of the pure commission form of government. If the mayor does not appoint trained officials, the same conditions will usually prevail as exist under the elective system.

4. *The city manager plan.*—This form of government is admirably adapted to handle public functions of a fiscal nature. There is much doubt as to the wisdom of this type of administration for public functions chiefly of a social and educational nature. As a general rule, however, if the city manager is himself a trained man, he is likely to select a trained official to head the park department.

5. *Government by board or commission.*—The plan of government by board or commission, which is the method of park administration in use in the majority of cities, is adaptable to all forms of city and county government. Park and city planners and other officials favor it

A Description and Evaluation

The general administrative control of parks in America adheres no more closely to a standard form than does American municipal government, per se. The concise description and evaluation herewith given of the outstanding plans of park government according to current practice, constitute Section II of Chapter VI, Volume I, of the new two-volume work, "Parks: A Manual of Municipal and County Parks" (A. S. Barnes and Company, New York), a brief review of which appeared on page 169 of THE AMERICAN CITY last month. This significant and permanent contribution to the literature of public recreational areas is the result of a national survey undertaken at the request of President Coolidge's Conference on Outdoor Recreation, by the Playground and Recreation Association of America in cooperation with the American Institute of Park Executives.

strongly. Government by board is the form almost universally adopted for the administration of the public school system, institutions of higher learning, public libraries, museums and art galleries. It is the form of government that people naturally adopt when they organize themselves to promote a movement for parks or recreation. A scheme of government so universally adopted must have certain merits to commend it. Among the advantages of the park board form of control are the following: (*a*) The majority of the park boards in America consist of three or more members so appointed or elected that the entire personnel of the board does not change at one time. The usual method is to have one appointed or elected each year. In actual practice, however, the method of rotation varies widely in different cities. This plan secures as nearly as is humanly possible under the present scheme of municipal and county government continuity of plan and policy in the planning, development and operation of the park system. Under the rotation plan of membership there will always be some members of the board who are intimately acquainted with previous plans and policies, and it generally happens that members of such boards serve several terms of office by reappointment or re-election. In a few instances membership is practically perpetual through the fact that members themselves have the right of appointment upon the expiration of the term of any member. (*b*) In general, members of park boards serve without compensation, though there are some examples of payment of salary, such as Louisville and Boston. In a few instances a small allowance is made each member. (The Iowa park law makes this possible for Iowa cities.) Non-salaried service usually attracts only men and women of a high type and has no lure for those to whom office-holding offers merely an opportunity for personal gain. (*c*) It seems to be the general consensus of opinion that the appointing authority, usually the mayor, who acts with the approval and consent of council, will try to select outstanding men and women for service on the board. Even in the case of the election of members by popular vote, outstanding citizens are usually more willing to stand for election because of an opportunity for unselfish service than is commonly true of officers more fully under political control. (*d*) Because of the possibility of a more secure tenure of office, well-trained executives are more ready to accept employment under park boards. As a rule, such boards are keenly appreciative of the value of efficient technical service and more eager to secure trained executives than is true under some other system. (*e*) There is no division of interest under the park board plan of control, and members are chosen for a definite service to the community. Occasionally the care of cemeteries and of street trees is placed under park boards, but the nature of the service required is more or less in harmony with certain features of park work. (*f*) Park interests are more likely in the long run to be better served through the community of minds of a park board than under government by a single commissioner or a city manager, especially since the attention of the commissioner or city manager is distracted by other duties. The weight of influence of a park board in completing their projected plans is likely to be more powerful than that of a single individual. (*g*) The planning, development, operation and maintenance of the modern park system is of such a character as to require a wide degree of cooperation between the park department and various public and private agencies such as the recreation commission, if one exists, the schools and local civic groups. This cooperation is especially essential in the use of properties adapted for organized recreation purposes which are under the control of different boards. By judicious selection of the members of the park board, it is possible to have on the board representatives of the more important agencies for the purpose of facilitating the community use of all material and recreational resources. Even if this plan is not followed—and it is not absolutely necessary—school boards and other public governmental agencies with properties of recreational value under their control are more likely to have greater confidence in a board of outstanding citizens than in a single individual.

In spite of the many advantages of the park board plan of control, there are features to be guarded against. It may sometimes happen that permanency in tenure of office, which is one of the great virtues of a properly constituted park board, may become a great weakness. It is quite possible for the members, or a majority of the members, to become so vitally interested in some particular phase of park planning and development that other important features necessary to a well-appointed system may be neglected. Moreover, members who because of previous valuable service have been retained year after year may outlive their usefulness. Similarly, a superintendent may be continued too long in the service. There is every prospect that the functions of park departments will be continually expanding. In such an evolutionary situation there is no place for the park board member or chief executive who lives in the past and rests on laurels previously won.

A park board so constituted as to be wholly responsible in a political sense to the appointing authority or to the political organization back of the appointing authority is even more dangerous than an inefficient single elected commissioner, because further removed from the will of the people and because responsibility can be shifted. The park board form of government, in spite of these dangers, has thus far proved itself on the whole to be a satisfactory method of administration and one under which important progress has been made in the past few decades.

6. *Administrative control of parks by school boards.*—As has been pointed out, except in very rare instances the school board has no part in park administration and the relationship to the park department is a purely cooperative one. Schools, however, dealing as they do with children for eight or nine months of the year, the greater part of five days of the week, have an important responsibility toward the recreational life of the child, both in providing facilities and equipment, such as gymnasia, swimming pools, athletic fields, playgrounds and other play areas, and in supplying leadership through special teachers in physical education, handcraft, music and drama. Increasingly the school is serving those beyond school age by making its plants available as neighborhood social centers.

—*Copyright*, 1928, *Playground and Recreation Association of America.*

EDITORIAL NOTE.—The foregoing discussion is followed in Mr. Weir's book by specific examples of the powers of cities under various types of local government. Detroit is cited as typical of the handling of park and recreation matters in the federal-plan-governed city. Chapters IX and XVIII of the Detroit city charter are quoted fully. They provide for appointment by the Mayor of a Commissioner of Parks and Boulevards, and a Commissioner of Recreation (respectively), fixing the authority of each commissioner and the rights and duties of his office.

The following excerpts give some idea of the scope of each official's authority:

"The Commissioner of Parks and Boulevards shall control and manage all parks, public grounds, and boulevards, except as otherwise provided. . . Shall erect, repair, and maintain all structures necessary for the use of the department, or provided under its supervision for use of the public; shall macadamize or pave and keep in repair all roadways in the parks and boulevards of the city; may establish reasonable rules and regulations for the protection of the rights and property vested in the city and under control of the department, for the use, care, maintenance, and management of parks, grounds . . ." etc. "May make, with the approval of the common council, all contracts to carry out the objects and purposes of the department as herein provided."

The Recreation Commissioner "shall have power to conduct playground and indoor recreation facilities on the grounds and in buildings in charge of the board of education, subject to its consent; to supervise and equip playgrounds and playfields on property under control of the Commissioner of Parks and Boulevards; and to manage and direct such playgrounds, playfields, indoor recreation centers, debating clubs, gymnasiums, public baths, and other means of public recreation as may be provided by the common council; shall have power to inspect all forms of commercial recreation, such as theaters, moving picture shows, pool and billiard halls, bowling alleys and other commercial recreation places for which license is required . . . ."

The author comments upon the interesting feature of the Detroit system which gives the recreation commissioner the right to supervise and equip playgrounds on property under control of the Commissioner of Parks and Boulevards. He characterizes as unique the feature which places in the hands of the recreation department the supervision of commercial recreation.

Are Independent Boards Advisable for Parks, Health, Schools or Welfare Activities?

A Discussion of the Preceding Article, on Various Methods of Governing Parks

By H. W. DODDS

SECRETARY, NATIONAL MUNICIPAL LEAGUE

UNTIL he comes to government by special board or commission, Mr. Weir discusses with a fair display of impartiality the various types of organizations for parks. But at this stage his enthusiasm betrays him as a positive advocate of the plan so much in favor with the majority of specialists whose interest in public administration is centered on one particular service. Thus the health people demand independent health boards and the public specialists separate welfare boards. At one time or another every department of municipal activity has tried the separate board idea. The argument has ever been about as Mr. Weir sketches it with respect to parks: continuity of policy; freedom from politics; higher ability attracted by the honor of serving on a respected board.

Quite properly Mr. Weir recognizes, by implication at least, the legislative supremacy of the city council. He would not set up in the park board a small legislative rival to the council as has been done in the past in some other connections. But in effect he appeals for independence in administration and expects more favorable treatment to be meted out by council through the pressure which the independent board, ideally conceived as consisting of influential and prominent citizens, can bring to bear.

To the Model Charter Committee of the National Municipal League the argument for special administrative boards appears to overlook two considerations fundamental to sound organization. These considerations apply equally well to health, finance, police, public works, recreation, parks or welfare.

Handicaps to Enforceable Responsibility and Well-balanced Development

The first is that to give any municipal activity a preferred or quasi-independent position upsets the unity of municipal administration and prevents the centralization of administrative responsibility. After all, the taxpayers meet the bills for parks, as they pay for other municipal services. They are entitled to have these services so coordinated that they will be administered as a harmonious whole. Only under such an organization can they place responsibility clearly. Separate boards destroy the simplicity of organization which makes enforceable responsibility possible. Moreover, no matter how important parks may be, other municipal services must be provided, governmental and social alike. As a taxpayer I am entitled to a coherent and well-balanced development of these services. I have a right to see that parks, while of great and growing importance, maintain their proper relationship to the rest of the structure. Thus the ultimate implication of Mr. Weir's position is seen when we consider the situation which would face our city governments if all the demands for separate boards to administer favorite functions were heeded. It would mean a return to the confused and irresponsible municipal organization of 1870, from which we are rapidly (and I hope permanently) extricating ourselves. Isn't it true that the people are entitled to as definite a location of responsibility for park management as for street maintenance or police administration?

The second consideration which renders the board idea untenable is the well-known ineffectiveness of boards as administrative agencies, a weakness which Mr. Weir recognizes in his criticism of commission government. As has often been noted, boards generally are long and wooden. Such qualities have a proper place in the scheme of things, but it is not as an agent of administration. Boards deliberate and hesitate. The members are active, they retard administration for the same reason that too many cooks spoil the broth. Of course, if they merely rubber-stamp the actions of their paid executive officer (in cities large enough to afford such an officer), they are quite superfluous, unless it be in the doubtful capacity as buffer between the executive officer and the council politically responsible in the proper sense.

Big names on a park board are no guarantee of sound administration. They may signify exactly the reverse. I recall one park board eminently respectable, fully conscious of their respectability and quite scornful of the regular municipal officials, who paid twice as much in rentals for shovels for a single job as it would have cost to buy them outright.

If experience has demonstrated anything, it is that to get good operating administration a full-time, fully responsible head is required for each department. When an unpaid board, which can give only incidental, as opposed to professional, attention to the matters in hand, is injected between the operating service and ultimate control (the city council), slovenly administration emerges.

Securing Continuity of Planned Policy Through the City Planning Commission

The stress upon continuity of policy really betrays an inclination to elevate the park board from an administrative agency into a quasi-legislative, policy-determining body. Continuity in administration is good, if it is good administration, but continuity of legislative policy is more important and more difficult to secure. Nevertheless, I do not believe that a thoughtful person who has given tne matter consideration from the broad viewpoint of the city government as a whole will deny to the council plenitude of legislative power. Indeed, I imagine that park experts appreciate fully the importance of but one legislative body for the city, although when they talk about continuity of policy I sometimes fear that they are in confusion with respect to the proper scope of the authority of an administrative agent.*

It will be readily granted that our city councils have shown too little continuity of planned policy, but improvement is in sight under the impetus of the city planning movement. And it is to the city planning commission, not to special boards and agencies, that friends of parks, as well as other friends of good government, must look henceforth for the preparation of, and adherence to, their programs. No longer may parks be considered without reference to street development and zoning plans. The city planning movement recognizes that the city's development must be attacked as a unit and that planning is a distinct staff function, but the powers of the planning commission are advisory only. It is proper, therefore, that it should have the semi-detached status which most city charters give it. As the understanding and appreciation of city planning increases, the weakness of the argument for special municipal boards will be fully revealed.

---

* AUTHOR'S NOTE.—Public education consumes from 40 to 50 per cent of local taxes. Because of the size of the public school organization and because of its specialized function, good arguments for an independent status may be advanced. However, there is much to be said for bringing schools within the purview of the city government, at least on the physical and business side. Respectable school boards are being revealed as guilty of waste and bad business methods for which municipal government proper would be roundly abused.

What Trees Are Best for Planting in Our Northern Cities?

By DONALD H. FOWLER
THE DAVEY TREE EXPERT CO., KENT, OHIO

WHEN it comes to planting trees, many cities, many people, seem to follow a peculiarly short-sighted policy, which they would not dream of following in ordinary business ventures. And yet, this tree-planting problem is not a simple or unimportant one. Millions of dollars are being spent in planting new trees or in replacing old ones. What is received from this huge investment? Sometimes much, often little, usually less than should have been received. Just where is the trouble?

Take for a moment the problem of other planters. We know, for instance, that no intelligent farmer would think of planting corn or oats or cabbages without first learning what particular kind of corn or oats or cabbages does best under the soil, climatic, and other conditions encountered on his farm. We know that no intelligent fruit grower would plant apples or peaches or cherries without first determining what particular kind of apple or peach or cherry tree is best suited to the local conditions which exist. Satisfactory results can be secured only by wise selection.

Although city trees ordinarily do not furnish commercial crops, it is nevertheless true that the only way for a city to have fine trees is to use great care in selecting the trees that are to be planted. Inadequate attention is too often given to this selection problem. If the right kinds of trees are not planted, the results are unsatisfactory and the money spent in planting and maturing these trees is largely wasted.

But perhaps it isn't worth while to worry about our trees. Some folks feel that way about them. Fortunately, most people are becoming increasingly interested in trees. Why?

Imagine the barren ugliness of a treeless city. Who would want to live in such a city? With the development of culture, people insist that their cities shall be not only sites of manufacture and commerce, but also attractive places in which to enjoy life.

Why Trees?

Trees are an inspiration and a source of comfort. They are an aid to health, for they purify the air by absorbing the carbonic acid gas exhaled by man, giving back the pure oxygen that he needs. The cool shade of trees modifies the pitiless heat of summer. Beautiful trees greatly enhance the value of real estate. They attract people and money to any city. They have a beneficial and uplifting influence. People who live among trees seem to be happier, more contented, better. It has properly been said that any progressive city possesses three great assets—its industries, its commerce, and its appearance. Appearance depends on trees. Appearance reflects the kind and quality of people that compose any city. A city with fine trees is a pleasant city to live in. Trees are vitally worth while.

To have good trees and to get the most from the planting investment, careful study must be given to the problem of selection. Many a city is filled with ugly, broken, infested trees that are an

THE BEAUTIFUL SUGAR MAPLES THAT ADORN AN AVENUE IN ROCHESTER, N. Y.

THE MOLINE ELM GROWS RAPIDLY, THE BRANCHES PARALLEL TO THE TRUNK

eyesore to the community and a liability rather than an asset. Usually, it would have been just as cheap and just as easy to plant trees that would have been a permanent source of beauty and pride for many generations to come. Trees are like people or horses or automobiles, in that some are good and some are not so good. In planting, selection is possible. Where selection is possible, it is foolish to plant poor trees.

Eight Main Points

What should be considered in selecting the best trees for the prevailing conditions in the countless cities of the northern states? Eight main points should be kept in mind:

1. *Form.*—Mature street trees should be symmetrical of outline and straight of trunk. The tops should be well rounded and full. Trees for the lawn may be unsymmetrical, with crooked trunks and drooping limbs, if the owner prefers. At the same time it is true that many street trees make ideal trees for lawns and for informal settings.

2. *Shade.*—It is important to have trees that retain their foliage in good condition throughout the summer months. It is desirable to have trees that show pleasing colors in the fall. No consideration should be given to trees that grow in a scraggly manner, for such trees offer little shade and are decidedly unkempt in appearance. Trees which cast a too dense shade are objectionable to the extent that grass will not grow beneath them.

3. *Hardiness.*—Any good tree must be strong, for otherwise it will not survive heavy windstorms and snow and sleet. Any good tree must be capable of withstanding the various unfavorable conditions, such as poor soil, dust, drought, heat and smoke, that usually accompany city life.

4. *Freedom from Insect Attack.*—Very few trees are immune from the attacks of insects. Many are favorites of countless hordes of insects. Desirable trees are reasonably free from insect attacks.

5. *Climate.*—Just as animals have zones in which they thrive best, so do trees have climatic regions to which they are best suited.

6. *Cleanliness.*—Certain trees lose their leaves throughout the summer. Others cause objectionable litter by shedding bark or twigs, or by dropping blossoms and fruits. Such trees make tidy lawns impossible.

7. *Ease of Transplanting.*—Many excellent trees are difficult to transplant successfully. Too many do not survive.

8. *Longevity.*—Slow-growing trees are usually a much better investment than are the rapid-growing kinds. The reason is that the fast growers are almost invariably brittle, weak and easily destroyed by winds and by the agencies of decay. For permanence the slow growers are best.

As a result of more than a quarter of a century spent in caring for hundreds of thousands of trees throughout the greater part of the United States and eastern Canada, the Davey Tree Expert Co. has found that many commonly used trees are impractical, while other less common trees are worthy of more consideration. Practically all trees have good points and bad points.

The Elms

Probably no trees are better known than the elms. Particularly in the east, they have brought unusual beauty and charm to many a fine old city or hamlet. Of the many elms, three merit special consideration.

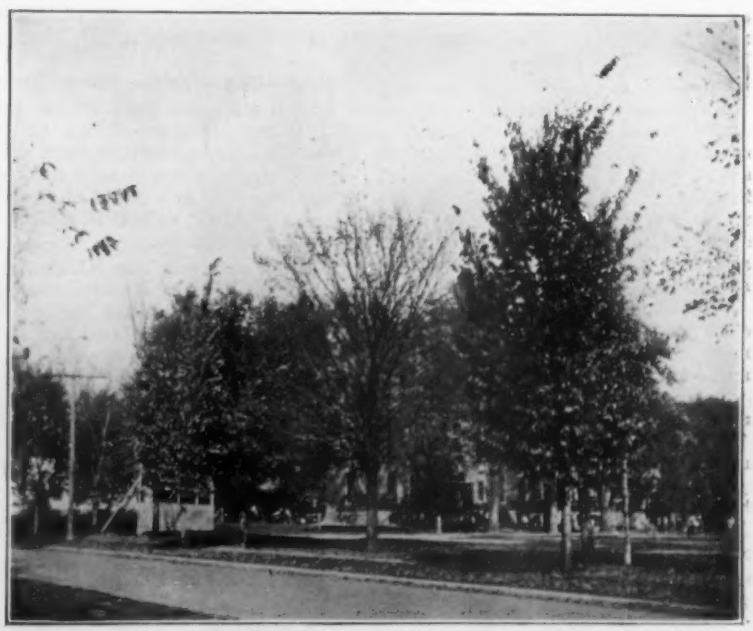
A giant among shade trees is the American elm (Ulmus americana). Its beauty is not outdone by its size. In summer it rises like a shining, great, green, feathery fountain, going up and up, finally parting and drooping gracefully away at the sides. Winter finds it scarcely less attractive. The great, strong, arching limbs lend a touch of inspiring grandeur to any landscape. Insects like this tree, among them the gipsy moth, the brown tail moth, the elm borers, the elm leaf beetle, the tussock moth, the spring elm caterpillar, the elm bark louse, the leopard moth, and the bag worm. Annual spraying of elms is essential in many sections. The American elm grows fairly rapidly and is easily transplanted. It is a fine tree for wide streets.

The English or European elm (Ulmus campestris) is smaller than the American elm, and has a more rounded head or top. It holds its leaves late in the fall. Insects damage it considerably. The tree is best for lawns or parks, and is frequently used for streets.

A peculiarly shaped elm that is becoming quite popular is Klelm's American Moline elm (Ulmus americana molinii). It has a pronounced conical or pyramidal shape. The leaves are large, glossy and deeply veined. Milwaukee has hundreds of these handsome trees on its streets and boulevards.

The Oaks

A number of oaks are good for northern planting. The mighty king of the oak family is Quercus alba, the white oak. Here is a stately tree, dignified, tall, broad, strong. Properly cared for, it will live for hundreds of years. When spring opens the white oak buds, the tiny unfolding



NOTE THAT THE MOLINE ELM IS IN FULL LEAF IN THE FALL, ALTHOUGH THE NEIGHBORING ELM IS BARE

leaves are of a delicate pink, covered with a down which gives the tree a cool, soft frosty appearance. When late fall days come round, the glory of its rich purplish-red leaves gives a parting splendor after other trees are stiff and bare. Unfortunately, white oaks are often difficult to transplant. They are not especially good for street trees.

The appropriately named scarlet oak (Quercus coccinea) is a brilliant, towering mass of gleaming scarlet in the fall. It is good for specimen or mass planting or for streets. The tree will thrive in relatively poor, dry, sandy soil.

The pin oak (Quercus palustris) is too often overlooked. It is formal and taller and more slender than most oaks. The trunk rises like an unbroken shaft. Slender branches stretch out almost horizontally; the lower ones drooping. Because of the close branching of this tree, many of the little twigs shade out and die, making spur-like projections which give the tree the name of pin oak. The tree prefers a moist, rich soil, but adapts itself well to varying conditions. It is not difficult to transplant successfully. Pin oaks make handsome street trees.

For wide suburban streets, the red oak (Quercus rubra) is a valuable tree. Its leaves are of a deep, dark green which gives it a richness of appearance that is striking. It does not do well in wet ground or when surrounded by pavements, but has the advantage of surviving comparatively poor and dry soil much better than do many other trees.

The Willows

As a class, the willows are very unsatisfactory, being weak, brittle and often actually dangerous.

The European weeping willow (Salix babylonica) is, however, a desirable and very beautiful tree. It should be planted in a location where it will be reasonably well protected from the winds. Since it requires a good deal of moisture, it is best for use at the edge of a lake or pond.

The Lindens

Of the lindens, two should be considered for general planting. These are the American linden and the European linden. The former (Tilia americana) is a vigorous thrifty-appearing tree, especially good where heavy foliage and deep shade are desired. While young, it usually grows in pyramid form, later developing into a large round-topped tree. Its heart-shaped leaves are light green in color. The tree thrives best in a deep, rich soil. Various insects and fungi frequently attack it, and consequently it may need special care at times. It is not difficult to transplant. If properly cared for, it makes a good street tree.

The European linden (Tilia europoea) has beauty and symmetry that are seldom equaled. Fortunately, the tree is somewhat hardier than the American linden. After becoming properly established, it does very well under city conditions. It is attractive as a street tree.

The Maples

The maples are of many kinds. Not all are to be recommended.

The much used silver maple (Acer dasycarpum) is ordinarily a very poor tree. It is weak in structure. The wood is soft and has little strength. As the branches grow large, they become too heavy for the strength of the wood. They are continually being broken up by the winds. Many insects attack silver maples, accomplishing considerable damage each year.

The red maple (Acer rubrum) grows less rapidly than the silver maple, but is a stronger and better tree. Its top is lower, more rounded, and compact. Insects bother it less. The name, red maple, is appropriate. Early in the spring, tiny red blossoms cover the tree. The light green leaves later flutter on red stems. In the fall, the leaves turn a glorious scarlet. It makes a reasonably good street tree.

An imported tree of distinction is the Norway maple (Acer platanoides). At maturity it is a tall, wide-spreading, round-topped tree of rich, lustrous green in summer; yellow in the fall. The shade from the Norway maple is so dense that grass cannot be readily grown beneath it, unless the trees are kept properly pruned. Freezing sometimes splits open the trunks of these trees in the winter. They are attacked to some extent by insects, especially by the aphids. It is probably the best maple for street use.

Schwedler's maple (Acer platanoides schwedleri) is frequently mistaken for the Norway maple. It has much the same appearance, and, like the Norway maple, it is a desirable tree.

The most beautiful of all maples is probably the sugar maple (Acer saccharum). In the summer it is a shining, symmetrical tower of rich, rippling green. In the fall it becomes a riot of brilliant, glowing color. The sugar maple is sensitive to dust and smoke, particularly during dry weather. It needs plenty of water and good soil, and is not very hardy under adverse city conditions. The sugar maple borer and the leopard moth are at times very destructive to this tree.

Walnut—Gum—Tulip—Horse-Chestnut

Juglans nigra, the black walnut, grows well throughout most of the northern states. It is symmetrical in form, round-topped, usually with a straight trunk that at maturity rises to a height of 75 to 150 feet. The black walnut is difficult to transplant successfully.

The red or sweet gum (Liquidamber stryiflua), although a southern tree, does well as far north as central Michigan and Massachusetts. It is a large tree and a very attractive one. In the fall its distinctive star-shaped leaves turn to varied colors which range from deep red to yellow, dark purple and brown. The tree prefers a rich, moist location. Larger specimens are difficult to transplant. This is an attractive tree for lawns and parks.

The tulip (Lirodendron tulipifera) gets its name from the large tulip-like flowers which it bears in the spring. It is a satisfactory tree for lawns and parks, but is somewhat difficult to transplant. It grows to a large size and casts a heavy shade. The clean, glossy leaves are decidedly unusual, having chopped-off ends. Tulips do best in soil that is rich and deep. It becomes too large for street use, except along very broad avenues.

No tree has deeper, richer, more luxuriant foliage than the horse-chestnut (Aesculus hippocastanum). In summer it casts a very dense shade. When spring opens its countless blossoms, it is magnificent. Unfortunately, the tree is susceptible to the attacks of many insects and a number of serious leaf diseases. Careful spraying may be necessary to keep it in a thrifty condition. It is a good tree in the open, but not a very desirable street tree. It drops its leaves throughout the summer.

Birches and Beeches

Among the most beautiful of all trees, and also among the least desirable from an investment standpoint, are the white birches. They are splendid trees, but impractical for planting in most sections, because of the work of the bronze birch borer, which tunnels under the bark, usually killing any trees which it attacks. There is at present no effective control for bronze birch borers. To plant white birches is a pure gamble.

Hearts and Cupid's arrows usually cover the smooth steel gray or bluish bark of most American beeches. This tree, scientifically known as Fagus americana, is a beautiful, symmetrical, thick-growing tree, having long, slender, drooping branches. Because of the dense shade which it casts, grass does not grow well beneath it. It does not do well in the open and therefore should not be considered as a street tree.

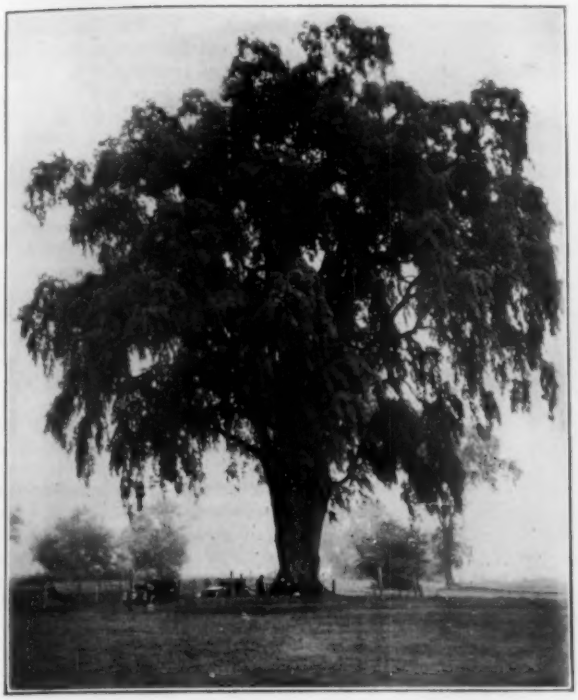
The European beech (Fagus sylvatica), like the American beech, is attractive as an ornamental tree. If desired, it can be secured in the purple-leaved or weeping variety.

The Planes—The Cucumber Tree

A good tree for shade is the oriental plane (Platanus orientalis). It is well shaped, hardy and attractive. An interesting feature of the tree is the patch-like manner in which it sheds its bark, leaving the trunk and branches mottled irregularly with green, white, gray and brown. The oriental plane is a valuable tree for varied uses. Insects and diseases do not greatly bother it, as a rule. It grows rapidly and makes an excellent street tree.

The American plane or sycamore (Platanus occidentalis) has most of the characteristics of the oriental plane. It grows larger, however, reaching a height of 170 feet, if conditions are right. It prefers plenty of water and a good soil. A disease known as anthracnose of sycamore often attacks the leaves and twigs of this tree, doing great damage. The disease can be controlled by careful pruning, and by repeated spraying at proper intervals. It becomes too large for use on most streets.

The cucumber tree (Magnolia acuminata), so-called because of its pink, cucumber-like fruit, makes a handsome cone-shaped tree. It is hardiest of the magnolias, and is commonly planted as an ornamental tree. The tree does best in rich, fertile soil.



THE AMERICAN ELM

THE BLACK WALNUT

The Poplars

Many cities have great numbers of poplar trees. They are among the least desirable for city planting. They do have the advantage of growing rapidly; that is about the only good thing that can be said for them. Their wood is soft, weak and brittle. They break very easily in storms and are especially dangerous when large. Their roots roam far and wide, clogging sewers, doing costly damage. Their leaves drop continually, making tidy lawns almost impossible.

Of all the poplars, the white or silver poplar and the Bolle's poplar are probably the best. Populus alba, the silver poplar, survives storms reasonably well, although it is not a strong tree. The silvery tint of the leaves gives the tree a distinctive point of delicate beauty that adds to its value.

The Bolle's poplar (Populus alba var. bolleana) closely resembles the dignified, tall and slender Lombardy poplar. The leaves have a white wooly coating beneath, which increases the attractiveness of the tree.

THE WHITE OR CONCOLOR FIR

THE WEEPING WILLOW

A FINE HORSE-CHESTNUT IN BLOSSOM

The Evergreens

Evergreens are rarely considered as street trees, but they have a real importance in practically all other types of plantings. Often they give that finishing touch that makes the picture complete.

The smaller Douglas fir, Pseudotsuga douglasi, is a hardy and handsome tree. It grows rapidly, and does well under a wide variety of conditions. It has a compact growth, and is distinctly cone-shaped when young. The color is a silvery blue-green.

The graceful, long, slender, drooping branches of the Canadian hemlock (Tsuga canadensis) make it one of the most beautiful of the evergreens. The unusually dark, rich, green foliage is impressive. The tree does best in moist, rich, loamy soil. For hedges or screens, it is especially good.

The bluish-leaved, slim, compact Colorado juniper (Juniperus scopulorum) is attractive to birds because of the little blue berries which it bears in the fall. It is a formal tree that can be used as an individual or for borders or group masses.

Abies concolor, the white or concolor fir, has a distinctive grayish-blue hue and is a fine, symmetrical tree of thick foliage.

The fragrant red cedar, (Juniperus virginiana) grows throughout the United States, being largest in the rich, moist bottom-lands of the South. The tree has a distinct conical shape when young. It is usually dark green or bluish in color; sometimes reddish brown. The leaves are of two forms—awl-shaped and scale-shaped. It is tolerant of many soils and conditions. The name red cedar comes from the color of the matured wood.

The silver red cedar (Juniperus virginiana glauca) is a smaller tree, usually from 15 to 20 feet high. The new growth each year is of a distinct silvery whiteness, later changing to blue-green.

A product of Germany is the Pfitzer juniper (Juniperus chinensis Pfitzeriana). It is one of the newer trees that is rapidly increasing in popularity. It has an interesting spray-like manner of growth. In height, it reaches 8 or 10 feet, but can be kept lower by shearing, if desired. The color is blue-green.

Of the spruces, the Colorado blue spruce (Picea pungens glauca) is the most strikingly beautiful. It has a magnificent blue coloring that fairly sparkles. It grows well throughout the country.

The Black Hills spruce (Picea canadensis albertiana) is the hardiest of spruces. It is another symmetrical tree of bushy, compact growth. The bright-green to blue-green foliage has a pleasing freshness. The size varies from 25 to 40 feet at maturity, with a branch spread of 10 to 12 feet.

Another hardy spruce is the Norway spruce (Picea excelsa), which grows well in most sections. It makes a fine windbreak, and is good for hedges or solid plantings.

Of the hardy pines, the Austrian pine (Pinus nigra) is worth consideration. It is rather difficult to transplant, but makes a sturdy, handsome tree that is very resistant to the usual unfavorable city conditions.

Picturesquely irregular in shape, the Scotch pine (Pinus sylvestris) makes a pleasing tree for parks or lawns. The bark is an uncommon salmon color; the foliage is blue-green. The tree will grow to a height of more than 70 feet.

The white cedar or arborvitae (Thuja occidentalis) is a very formal tree that is tolerant of widely varying conditions. It grows to a height of 60 feet and is narrow and conical with flat frond-like deep-green foliage. Because of its thick foliage, it is often used as a screen.

From Japan comes the Japanese yew (Taxus cuspidata). It is upright and compact, with rich dark-green foliage and bright-scarlet fruit.

An attractive small evergreen is the Mugho pine (Pinus mughus). It is wider than it is high, being some 4 or 5 feet tall and often more than 8 feet broad. Instead of a single stem, it has many trunks or branches. It seems to grow almost anywhere and is apparently free from insect attacks. The color is deep green.

The Japanese trailing juniper (Juniperus japonica) is another of the low-growing evergreens. Although only 8 to 12 inches high, it spreads out to a diameter of from 10 to 15 feet. It is hardy, and good for borders, beds, terraces and hillsides.

The prostrate juniper (Juniperus communis depressa) spreads out 15 feet or more and is seldom more than 3 feet high. Its grey-green leaves are sharp-pointed. It grows vigorously and thrives on gravelly or sandy hillsides, even when fully exposed to the sun.

These are some of the outstanding trees which should come up for discussion in any comprehensive planting program. The list is by no means complete. A number of trees that are not mentioned will do splendidly under conditions that are distinctive of certain localities. Local conditions vary a great deal, and these local conditions largely determine which trees to use. No general rule can be laid down to be followed everywhere.

In picking out trees for planting it is particularly important to observe just what trees are now doing well in different localities. It is equally important to discover which trees are doing poorly. Consultation with reliable local nurserymen is invaluable and necessary before

embarking on a planting program of any importance. And it should always be remembered that trees are not telephone poles or fence posts that can be stuck in the ground and forgotten for many years. Trees are just as much alive as men or animals. They live, grow, breathe, and produce offspring. They are subject to sickness and disease. They will live and thrive almost indefinitely if given proper care. If neglected, their lives will ordinarily be short. Anything that is worth having is worth taking care of. An investment in tree care is the insurance which guarantees that the planting investment will eventually bring the desired return in shade, beauty, health, and civic happiness. Most poor or dangerous trees are the direct result of neglect.

Thousands of dollars spent in tree care may be almost completely wasted. Too often the workmen know little or nothing about trees. They may do more harm than good. No one would employ a blacksmith to perform a delicate surgical operation. A man is wanted who has special training and proven skill. Trees, like people, can be killed or permanently disfigured or injured by the expensive economy that often requires that priceless city trees shall be entrusted to well-intentioned but unskilled men.

One of the first steps in any tree work should be to build up a department which not only will be responsible for the city trees, but will be composed of men who either know tree care thoroughly, or are authorized to employ outside consultation and help. One of the large wastes in most cities is the continued loss of thousands of trees that could and should be saved.

EDITORIAL NOTE.—For the photographs that illustrate this article, THE AMERICAN CITY is indebted to J. Horace McFarland Co., Harrisburg, Pa., with the exception of the two of the Moline elm, on page 103, which were furnished by H. R. Mosnat, of Morgan Park, Chicago.

Real Civic Pride Displayed by Portland Children

By M. NORRIS DAVIS

FEW, if any, localities have such an annual event as occurs in Portland, Ore., in June. This is a parade which was originated by children thirteen years ago, and which has become such an important occasion that streets are roped off for it, just as they are for the huge Rose Festival parade that has made this city famous. Newspapers give the parade much space in their columns, policemen are on duty to keep the crowds back, prizes are awarded by interested merchants, tourists aim to arrive in time for the event, and one year's parade has no sooner unwound its colorful way and disbanded, than plans are being made for the next.

And Portland's youthful citizens, ranging in age from four years to seventeen, manage the whole affair! One year a local business men's organization sought to take it over, because it had grown to such proportions, but the children would have none of this. They would only consent to the older folk's contributing prizes for the different sections—bicycle, doll-carriage, scooter, comic, etc.—and also allowed the men's club to furnish refreshments to the parade participants!

Meeting before the gala occasion, the youthful citizenry elect the king, queen, pages and dignitaries who shall rule the festivities that occur before the big parade. These festivities follow the precedent of the larger one annually held by the adults of their city, but with many additions and changes which are the children's own.

Of course, the parade itself is the long-looked-forward-to climax. Last year there were over five hundred entries. Besides the flower-decked floats of the queen, the king and the royal parties, all sorts of vehicles are brought into use, all gaily and artistically, or amusingly, decorated. Many of the children are on foot, perhaps leading their pets; but, walking or riding, everyone is in costume.

It is a busy day for the Boy Scouts, who take keen delight in seeing that order is kept and that assistance is rendered in every emergency. In fact, I have heard more than one of the officials in some of the adult parades express envy at the smoothness with which the affair progressed.

This parade and its incidental festivities are among the finest examples of good citizenship and team-work on the part of the junior members of a community that I have ever seen. We look for much from these coming men and women when they take their part in Portland's future as loyal American citizens.

THE PARADE WHICH THE JUNIORS OF PORTLAND, ORE., CONDUCT AS AN ANNUAL EVENT

Can Intelligent Zoning Be Done Without a Comprehensive City Plan?

By RUSSELL VAN NEST BLACK

FIVE hundred and fifty zoned municipalities and less than two hundred having anything remotely resembling comprehensive city plans! Does this, coupled with the struggle zoning has had and continues to have with the courts and many intelligent private interests throughout the United States, have any significance?

More difficulty than any other single obstacle encountered by specific zoning provisions has been that requirement of "reasonableness." What comprises a necessary basis for reasonableness? Is it possible, for instance, to create or design a zone plan and ordinance reasonable in every part, except upon a foundation of exhaustive study of all the peculiar growth tendencies and probable future needs of a city, or without establishing at the same time a framework of streets, parks, and air, rail, and water transportation facilities, and drainage and sanitation measures, just as certainly and firmly as it is attempted to establish the use of land through zoning? What element of danger lies in zoning without such a foundation?

These are questions which no community now contemplating the preparation or revision of a zone plan can afford to disregard.

This necessity to question would never have occurred, zoning would never have ventured so far alone, had it not seemed so easy and so cheap; had it not seemed to offer such a lot for little effort. Appearing so, it has caught the popular fancy, is frequently called upon to perform functions for which it was never intended, and now stands in danger of being over-ridden.

Tendency is great to think of ordinances as ends in themselves, and too little attention is given to the application of the ordinance both in definition of district boundaries and in administration.

These developed weaknesses are probably quite natural to such a new science in its experimental stages, but are none the less unfortunate and have resulted in many ill-advised and unsound zoning measures.

But now, after ten years of widespread and very intensive zoning experience, we should have learned enough about this thing to detect many of its flaws and dangers and to so reshape zoning procedure as to eliminate them. This seems especially so when we realize that zoning practice has changed very little since its inception in this country.

To arrive at something approaching a cross-section of present conception of what constitutes sound zoning, particularly as related to the several other phases of city planning, the writer has undertaken to get an expression of opinion from competent students and observers of zoning and planning throughout the United States. To the question, "What is the proper relation of zoning and city planning?" about thirty replies have been received from city officials, planning and zoning commissioners, professional planners and others. Here are quotations from some of these replies:

THOMAS ADAMS, General Director of the Regional Plan of New York and Its Environs, New York:

"Zoning is a part of city planning, and city planning should not be carried out in parts. Every part of a comprehensive city plan is interrelated with the other parts and all need to be coordinated for the purpose of obtaining a logical and effective plan. There is urgent need to revise zoning methods and to begin applying zoning on a basis that will be reasonably effective and permanent, and therefore equitable. This improvement will only be possible when zoning is based on sound principles and is related more to health and safety and less to land values."

FRED W. AMETER, Engineer, Zoning Board of Adjustment, Denver, Colo.:

"I believe that a most satisfactory method (of planning procedure) would be to adopt a comprehensive city plan before working out a zoning scheme, as it could then be done in a more intelligent way."

HARLAND BARTHOLOMEW, City Planner, St. Louis, Mo.:

"I believe no zoning can be done comprehensively except in conjunction with a comprehensive city plan. In fact, I would even go so far as to state that, in my opinion, most zoning done without city planning is more or less violative of the intent of zoning statutes, which require comprehensive considerations of traffic, health, and other general city-wide considerations.

EDWARD M. BASSETT, Counsel, Zoning Committee, New York:

"It seems to me that no generalization can be made regarding making of street layouts and zoning simultaneously. Each city presents a different problem. In unbuilt areas it is a good plan to make the street layout and zoning simultaneously."

ALFRED BETTMAN, Attorney and Chairman of the City Planning Commission of Cincinnati, Ohio:

"The city plan and the zone plan are not two separate things. One is the whole and the other is a part. The zone plan is that part of the city plan which relates to developments on private property, whereas

Suggested Guides to Sound Zoning

In summary of the statements quoted in this article and of the writer's own observations, the following are offered in suggestion as a few general guides to sound zoning:

1. Zoning should be done as a part of a comprehensive city plan which takes into consideration: future street requirements and the handling of traffic; parks and other recreation facilities; general transportation necessities; future school sites; and all other such problems as may have direct bearing upon the proper physical development of the municipality. Most intelligent and most effective zoning cannot be done otherwise.

2. Careful attention should be given that the drafting of the ordinance and the procedure in its enactment are in strict accordance with the state zoning enabling act.

3. Every provision of the ordinance should be measured against the criterion: "Is it in the interest of the general welfare? Is it reasonable?"

4. It should be held constantly in mind that every municipality has its own peculiar individuality and problems; that no ordinance drafted to meet the requirements of one community will fit the needs of any other. Verbatim copying of ordinances or parts of ordinances of other cities should be done with the greatest discretion.

5. It should be recognized also that the adaptation of the ordinance to the ground, as expressed in the zone map and in the placing of the district boundaries, is no less important and is frequently more difficult than the drafting of the ordinance.

6. The ordinance should be as elastic and as little arbitrary as is consistent with the general purpose of zoning. Nothing should be done to prohibit or make difficult the introduction of new ideas in housing and land subdivision, or to discourage well-advised experimentation in these fields. A competent Board of Appeals or Board of Adjustment should be included in the administrative machinery.

7. It is advisable to employ a specialist of broad experience and familiarity with zoning and planning problems to assist in the preparation of the city plan and the drafting of the zoning ordinance, either throughout the whole program or as consultant in review of plans and measures proposed for adoption.

the other parts of the city plan relate to public developments. The relationship of the two is so obvious and so integral, that there can be but one answer to the question of whether a good zone plan can be made without making it a part of a more comprehensive plan. There surely cannot. Where the zoning ordinances before the courts have formed a part of a more comprehensive city plan, that fact has frequently been pointed out in the courts as evidence of the reasonableness and, therefore, of the legality of the zoning ordinance."

FEDERICK BIGGER, Architect and Town Planner, Citizens Committee on City Plan of Pittsburgh:

"The effort to develop some kind of social self-control must, of course, be experimental. Perhaps it may justly be called an experimental science, even though yet in its beginnings so far as modern problems of city planning are concerned. I believe this situation must be recognized when appraising our efforts. But in spite of this I do not think we can escape the recognition of this principle in planning, namely, that there cannot be developed the proper relationship between private property and the public facilities of all kinds upon which private properties depend, unless they are jointly considered. The control of private property (zoning) cannot be wisely developed unless it is done *in relation* to the existing and projected development of the necessary *systems* of public thoroughfares, public utilities, public recreation, and any and all other kinds of public service. Bringing this principle down to a present-day working basis compels us at least to do no zoning which is not related to public open spaces, considering the latter particularly as to the functions they perform for traffic movements, recreation, and the like."

CHARLES H. CHENEY, City Planner, Redondo Beach, Calif:

"Zoning without broad and comprehensive foundation is resulting in a great deal of unsatisfactory application of that science and threatens the best progress of city planning."

ARTHUR C. COMEY, City Planner, Cambridge, Mass.:

"Zoning is an integral part of the city plan, and as such should be correlated to its other parts and to the whole plan.

"To prepare a complete city plan is often impracticable at the time a zoning plan can be put through, but most of the advantages of correlation can be obtained by preparing a skeleton or preliminary city plan in conjunction with the zoning plan, the latter being in effect the first part of the comprehensive plan to be worked out in detail.

"When even this is impractical, as it sometimes is, I believe it is better to put through a zoning scheme than to do nothing. If the zoning is done by a competent city planner, he will to a degree safeguard the city against mistakes due to the lack of a worked-out city plan, knowing from experience where these pitfalls are likely to occur."

JACOB L. CRANE, City Planner, Chicago:

"I am convinced that it is not possible to zone safely and intelligently without having first prepared at least the outlines of a comprehensive general development plan."

CHARLES F. FISHER, Planning Engineer, City Planning Commission, Akron, Ohio:

"All parts of a city plan should, of course, be coordinated. If it is not possible or practicable, and it usually is not, to prepare all parts concurrently, any part, as a zoning ordinance, should be based upon complete information as to prevailing conditions, the existing plan of the city and surrounding region, and a vision of the city's proper and probable future development. The general city plan may, to a considerable degree, be in the mind of the planner even if it has not been reduced to tangible form. It is possible to prepare a zoning ordinance in advance of the other parts of a general city plan, but any worth-while zoning ordinance must be based, in part at least, upon a thoroughfare plan."

GEORGE B. FORD, City Planner, New York:

"The only logical way to zone, unquestionably, is as an integral part of a comprehensive plan."

STUART W. FRENCH, Chairman, City Planning Commission, Pasadena, Calif.:

"I believe zoning is a necessary part of city planning, because development along defined lines cannot otherwise be handled. Our zoning ordinance preceded the City Plan but was considered part of the scheme."

GEORGE H. HERROLD, Director and Engineer, City Planning Board, Saint Paul:

"As to the relation of city planning and zoning, we prepared our plan in 1920. We found that a 'plan' and zoning were so interwoven that we did not present our plan until after we had completed our zoning in 1921. We know now that our plan and zoning were properly correlated. We believe that zoning cannot be done effectively without having a tentative plan and that a comprehensive plan cannot be prepared without first having a tentative zoning plan. If we were to do this job over again we would be more considerate of the non-conforming use."

J. CLYDE HOFFMAN, Legal Advisor, City Plan Commission, Indianapolis, Ind.:

"I feel that zoning and the city plan should be worked out together."

HUGH E. LYNCH, Consultant, City Planning Department, Grand Rapids, Mich.:

"My opinion with regard to the proper relation between zoning and city planning is that a zoning ordinance adopted in conjunction with a city plan is a much more intelligent zoning ordinance plan than though there had been no other city plan studies made and conclusions drawn. Grand Rapids has made a comprehensive city plan study and plan.

"A zoning ordinance that is drawn in accordance with a comprehensive plan more nearly fits the city's future, as well as present, needs than one that has been drawn without consideration of probable future developments."

JOHN NOLEN, City Planner, Cambridge, Mass.:

"Zoning and City Planning:

"Widening streets or cutting through new main streets may change the character of the neighborhood, and thus change its zoning requirements.

"The location or relocation of a railroad, a city hall, a civic center, a high school, a park, an athletic field or a playground, or the treatment of a waterfront—all these may change the zoning requirements of abutting or adjacent property.

"Objections to Zoning alone:

"Zoning is largely a negative proposal. It is a prohibition against certain uses of property in certain locations, or it is a constricting regulation of building. Law and legislation declare "Thou shalt not," but never "Thou shalt do." The building of cities requires constructive action by the public and the encouragement of constructive action by private property owners.

"Zoning without planning tends to crystallize existing conditions, many of which should be changed: in fact, many of them will be changed. It may thus bring unnecessary hardship upon some property owners to zone without first planning.

"Zoning without planning is more likely to be faulty and unsatisfactory, and thus may in the future bring an unfavorable reaction against both zoning and planning.

"The legality of zoning is strengthened if backed by the preparation of comprehensive city plans, and is more likely to be supported by the courts."

M. J. O'HARA, Mayor, Worcester, Mass.:

"It does not seem to me that zoning can be done in Worcester or anywhere as efficiently without the preparation of a comprehensive plan."

J. S. SIMMONS, Chairman of City Planning Board, Hutchinson, Kans.:

"We have a settled city plan and our zoning ordinance is based on that. I could hardly see how a zoning ordinance would be of very much effect unless it was based on a general city plan."

GORDON WHITNALL, Director, City Planning Board, Los Angeles, Calif.:

"Zoning, to be more intelligent and stable, must be the result of more basic planning in respect to traffic flow of various types. It follows logically that such basic plan must first be resorted to if zoning is to be properly accomplished."

FRANK BACKUS WILLIAMS, Authority on Zoning and City Planning Law:

"Not only is zoning, rightly conceived, an integral part of planning, but it has the same intimate relation to platting, which is the planning of the undeveloped areas, and can be done intelligently only in the light of a comprehensive plan into which zoning enters."

J. T. WOODRUFF, Planning Engineer, City Planning Board, Springfield, Mass.:

"Zoning is the foundation for the plan and cannot be properly done without first having in mind the structure of the city plan, complete in all its parts, which is intended to be preserved and supported by the zoning foundation. More zoning as a foundation and less zoning as a blanket deed restriction is needed."

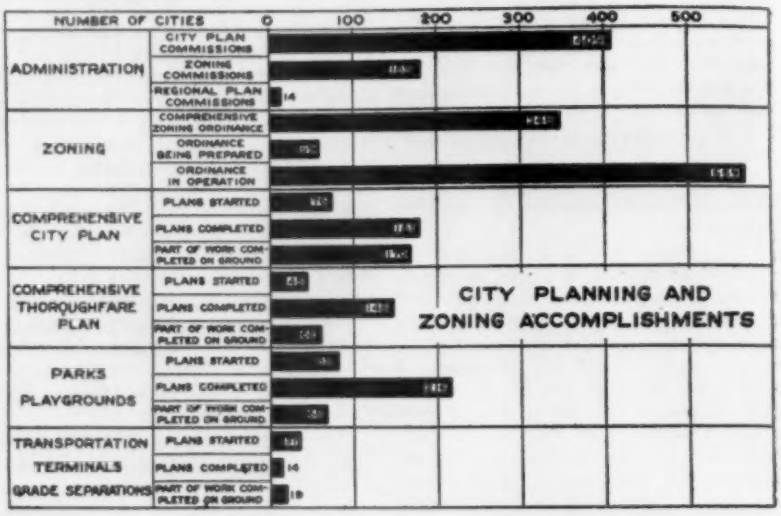
W. F. WOODSON, Secretary, Zoning Commission, Richmond, Va.:

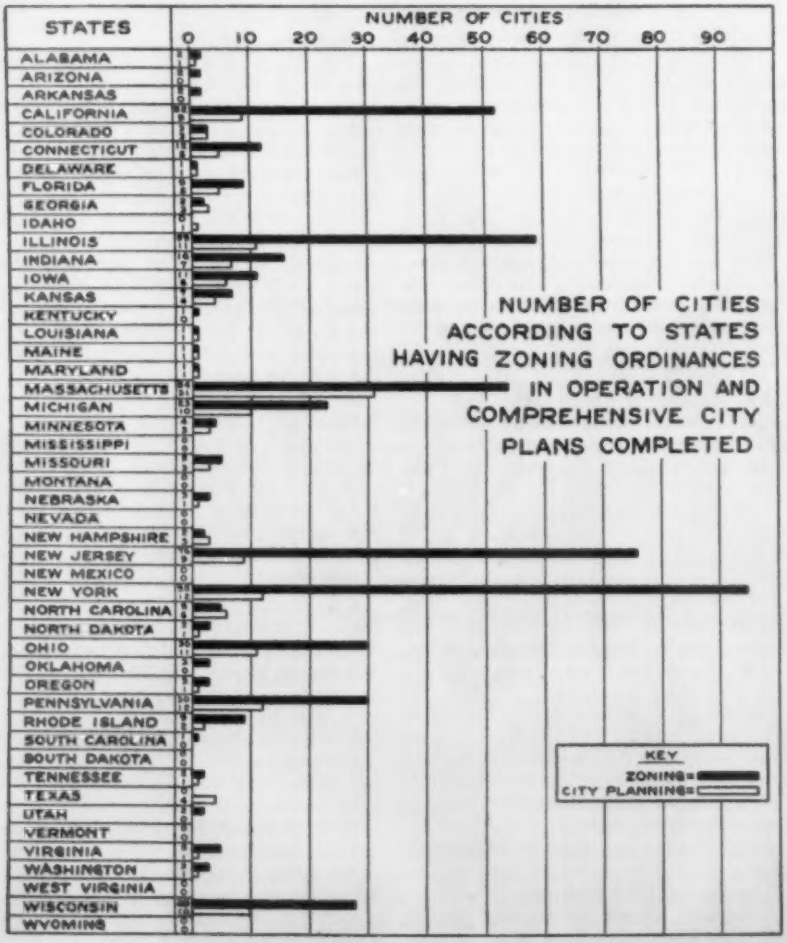
"As to the proper relation between zoning and city planning, I believe they should unquestionably be studied and worked out together."

City Planning and Zoning Accomplishments

WHITHER are we going in visualizing and meeting the community needs of the home? How far have we progressed intelligently in the planning and zoning of cities and towns? The member organizations of the Chamber of Commerce of the United States are eager to get at the facts in answer to these questions, in order to draw conclusions that will be of practical service. In response, the Civic Development Department of the Chamber has presented "facts without advocacy" in a comprehensive multigraphed report with the title City Planning and Zoning Accomplishments. (See department of Municipal and Civic Publications in this issue.)

The charts reproduced on this page are a part of the Supplement to the Report and are accompanied by 90 tables which present a wealth of data classified according to the principal phases of the work and the progress made by each city reported. The Report has been prepared by Gardner S. Rogers, Assistant Manager of the Civic Development Department, with a Foreword by John Ihlder, Manager of the Department. Under the division of City Planning, the principles involved in organizing a city planning commission, as indicated by experience, are stated. Under Zoning, a typical case of procedure in carrying out a zoning program is outlined.





The Report has been prepared by Gardner S. Rogers, Assistant Manager of the Civic Development Department, with a Foreword by John Ihlder, Manager of the Department. Under the division of City Planning, the principles involved in organizing a city planning commission, as indicated by experience, are stated. Under Zoning, a typical case of procedure in carrying out a zoning program is outlined. The powers of a zoning board of appeals, as provided for in the Standard Zoning Enabling Act, are given. These powers are exercised to prevent unnecessary hardships upon individuals because of unusual conditions in regulating use, height, and area of property by zoning ordinances.

The Report epitomizes city planning and zoning clearly:

"City planning is the proper coordination of all phases of civic development, to the end that a city may grow in a more orderly way and provide adequate facilities for living, working and recreation. To serve the community best, a comprehensive city plan must coordinate all physical improvements, even at the possible expense of subordinating individual desires. City planning applies the financial principles of business corporations to civic development. It means the budgeting of future improvements to secure an orderly and uniform growth for the entire community and prevent over-expansion of one phase of development at the expense of others.

"Zoning is recognition through law and ordinance that not all parts of a city are alike and that the health, safety and general welfare of a community demand differentiation among them. The functions of the main divisions of a city, residence, commerce and industry, are so dissimilar in their requirements and use that different treatments are necessary. A pavement suitable to a residential section often is unsuited to an industrial section.

"In addition to the use regulations, zoning also controls the height and size of buildings and so diminishes overcrowding, hazard to health, and depreciation of value by improper and unsafe living and working conditions. So apparent have been the advantages derived from proper zoning that the movement has grown from a single city in 1914 to 562 municipalities, November 1, 1927."

Water-Waste Surveys, Old and New

By LEWIS A. QUIGLEY

SUPERINTENDENT OF WATER-WORKS, FORT WORTH, TEXAS

WATER-WASTE surveys are not recent ideas by any means, as will be seen in the following excerpt from "The Water Supply of the City of Rome," translated from the original Latin manuscript by Clemens Herschel. This delightful volume covers the aqueduct constructed between 313 B. C. and 50 A. D.

"It has seemed not superfluous to examine consecutively the lengths of channel of each aqueduct in its several parts and in detail; this because the maintenance of the works is the most important part.

"The Julian aqueduct has regained its normal quantity and holds it even during notable droughts, by reason of the destruction of the branch pipes through which it was secretly despoiled.

"Joints should be made of lime and oil, especially what is now called 'pointing up' mortar on the outside of structures, also that it is a good plan to put ashes inside to begin with so as to stop fine leaks, a little trick of the trade called 'puddling with ashes.'

"It remains to account for the supply, which we found given in a lump sum, so to speak, and recorded, stating how much is to be allotted to each aqueduct, and to what wards of the city, how large is the quantity of water which is allotted to public and to private uses, as well as for luxury.

"Whatever had been unlawfully drawn by the water men, or had been wasted as the result of official negligence, has been recovered; this was practically equivalent to the finding of new sources of supply, as in fact the supply was almost doubled."

As in the days of the Roman aqueduct, a water-waste survey must start at the source of the supply, following to the distribution system, divided into districts, and each district subdivided into smaller districts or "shut-outs."

Conduit Tests at Fort Worth

The water-supply for Fort Worth, Texas, is secured from Lake Worth. The Lake Worth conduit is approximately 6½ miles in length, the upper half being 48 inches and the lower half 36 inches in diameter. The average pressure on the upper section is 10 pounds, in the lower section 15 pounds per square inch. Simultaneous measurements at the Lake Worth dam, at the valve, at the half-way mark, and at the filter plant, indicated a loss of 650,000 gallons per day in the upper section, and 700,000 gallons per day in the lower section.

Station Meter Tests

The 30-inch raw-water meter at the filter plant checked within 2 per cent, and the meter at the South Side booster plant also checked within 2 per cent, but the Holley central pumping-plant meter was found to register from 7.3 to 19.4 per cent slow.

Pump Tests

The survey indicated a slippage of 5.7 per cent on one 8-million-gallon steam pump, and 6.3 per cent on the other. The maximum discharge of the 12-million-gallon motor-driven centrifugal is at 91 pounds gage pressure when it delivered 12.5 million gallons, but it is usually operated at 100 pounds gage pressure, at which pressure it delivers only 11.5 million gallons.

The maximum discharge of the 8-million-gallon motor-driven centrifugal is at 100 pounds gage pressure when it delivers 8.5 million gallons.

It Pays to Investigate

This article indicates that it is just as much worth while to have a water-waste survey of your system today as it was in old Roman times when the old aqueducts were illegally tapped. Mr. Quigley's article demonstrates the value in dollars and cents as well as the convenience in determining the condition of valves and hydrants throughout the system.

Discharge Mains

Measurements made of the discharge mains from the Holley central pumping-plant indicated that the 36-inch main carried 46.7 per cent of the water, and the 30-inch main 53.3 per cent of the water. Since the water-waste survey was made, another 36-inch main has been installed which has relieved both of the above mains, especially the 30-inch main.

Leaks

The city was divided into seven districts, which showed the following leakage:

	Gallons Per Day
District 1	6,000
District 2	11,000
District 3	64,000
District 4	352,000
District 5	10,000
District 6	64,000
District 7	93,000
Feed mains	261,000
	861,000

The leakage seems to be divided about as follows:

	Per Cent
Joint leaks, cast iron	48
Broken mains	10
Mains 2 inch and smaller (screw pipe)	16
Valve leaks	4
Fire-hydrants	5
Services	12
Meter connections	5
	100

Inspection seemed to indicate that the high percentage of joint leaks was due to calking of lead joints before the lead had cooled sufficiently.

Meter Tests

Tests of meters of 3 inches and larger indicated that the 3-inch meters ran from correct to 22.5 per cent slow; the 4-inch meters from correct to 82 per cent slow; the 6-inch meters 2.3 per cent to 97 per cent slow; the 8-inch meters correct to 96 per cent slow; and the 10-inch meters correct. The under-registration of these meters as compared with the ledgers totaled 54,000 gallons per day.

Valves

A total of 331 valves were found to need attention, as follows: 26 valves from 4 to 16 inches were found closed; 14 valves from 6 to 16 inches, broken and closed; 10 valves, 4 to 10 inches, broken and open; 26 valves, 6 to 12 inches, buried, some under paving; 29 valves, 6 to 12 inches, stems bent; 12 valves, 4 to 8 inches, stems broken; 45 valves, 4 to 12 inches, could be operated; 11 valves 6 to 18 inches, found one-third open; 3 valves, 8 to 12 inches, found two-thirds open. The water-waste survey also showed that there were a number that could not be closed tight, a number with leaky stuffing-boxes, others with the operating nuts missing, and still others with concrete in the valve-boxes.

Hydrants

A total of 43 fire-hydrants were found to need immediate attention. There were 5 without water when opened, 4 that could not be opened and 14 which were leaking badly. Others were found with rounded operating nuts, drain valves needing repair, packing, hose and steam nozzles loose and other defects.

Improvement Since Survey

The twelve months' operating record shows the following improvements:

	Per Cent
Pumpage recorded by meters	83.1
Pumpage estimated from fire, street, sewer department and filter plant monthly reports	8.1
Unaccounted for	8.8
Total	100.0

The correction of meters as mentioned

above amounts to 54,000 gallons per day, and the leaks located and repaired save an additional 861,000 gallons per day, making a total saving of 915,000 gallons per day. This volume of water, even valued at 5 cents per thousand gallons, indicates an annual saving of $16,000, not considering the value of the other information secured through the very effective water-waste survey.

ACKNOWLEDGMENT.—From a paper read before the American Society for Municipal Improvements, at Dallas, Texas.

Gravel and Stone Bases for Asphalt Wearing Courses

By E. N. SEYMOUR

ENGINEER IN CHARGE OF ASPHALT WORK, GEORGIA STATE HIGHWAY COMMISSION

IN the construction of stone and gravel bases for asphalt wearing surfaces, it is our present practice to construct the base immediately after grading is completed for a width of 19 feet with a compacted thickness of 8 inches, although some bases have been placed in the past with a thickness of only 6 inches. It is our intention on these projects that have not been surfaced with asphalt to increase the thickness of the base to 8 inches before the surfacing is placed.

The chert base acts as a wearing surface during the period required for settlement of the embankment, or, in case funds are not available for completed pavement, it is used until additional funds become available. Before any asphalt surfacing is placed, the base is reshaped and additional material placed to give the full 8 inches of compacted depth. This method of stage construction gives a surfaced road immediately after completion of the grading and also insures a completed pavement with true grade and cross-section due to the reshaping after settlement. The cost of this type of base varies from about 45 cents to 90 cents per square yard, depending upon the distance the material has to be hauled.

In the north central and northeastern sections of the state there are numerous deposits of stone which are available locally for base courses. The deposits consist of limestone, granite, dolomite, marble and trap rock.

The material is required to show a French coefficient of wear of not less than 6 and is graded in size from ¾-inch to 2½-inch. Every effort is made to use local stone as well as other local materials for the base course, but the same specifications are adhered to as on imported materials and the local material is rejected if it is not of such quality as to insure satisfactory results. This local stone can be secured within hauling distance of many projects. In this section and in these cases the crusher is located at a central point on the project and the material hauled directly from the crusher to the road. There are also commercial quarries which supply the material where a local supply is not available.

Sand-Clay-bound Macadam

Both water-bound macadam and sand-clay-bound macadam are constructed, but, owing to the difficulty and expense of securing a sufficient water-supply and the further fact that some of the stone is too hard to be bound in this way, practically all of the stone base is sand-clay-bound. The stone is placed on the road in a uniform layer in such thickness as to secure the proper compacted thickness. Then a sufficient amount of sand-clay, not in excess of 30 per cent, to practically fill the voids is placed on top. This is then mixed into the stone by harrowing, and rolled until it will not compact further.

Local and Imported Road Metals Balance

This article shows in an interesting manner the methods by which the costs of imported and local materials, both of which must pass the same specifications, are balanced to secure the more economical type of base construction for the asphalt wearing courses. Attention is also called to the importation of gravel for mixing with local sand and clay for bases, thus saving the cost of the material and freight for clay and sand.

This type of base is usually constructed 19 feet wide with a compacted depth varying from 6 to 8 inches, depending on the class of material in the subgrade, and the thickness is determined in each case by careful study. With this base it is necessary that the asphalt wearing surface be placed as soon as the base is completed, as the macadam does not make a satisfactory wearing surface and if traffic is allowed to use it for any length of time, it will become so rough and irregular that it will be necessary to practically rebuild it before the surfacing can be placed.

Cost of Stone Base

The stone base is generally used in the north central and northeastern sections of the state and down as far into the central section as the prices for material and freight rates permit. The cost varies from 90 cents to $1.10 per square yard, which is in excess of the cost of the chert base previously discussed, and also slightly higher than other gravel types to be mentioned later, but the construction is justified for the reason that any other type would cost more in the particular section where stone is used.

In the central section of the state there are occasional deposits of stone and gravel which can be secured within hauling distance. Also, there is a commercial stone quarry and a commercial gravel pit. In addition, the freight rate on slag, as well as on gravel, from distant points is favorable. For these reasons all types of base are constructed in this section, the selection for each project being based on existing conditions for that particular locality. In some cases the conditions governing the cost of different materials have been so nearly equal that more than one type has been used on one project. This gives an opportunity to study the relative value of different types. The construction of the slag base is the same as for the stone.

In the southern part of the state there are deposits of local pebble soil. Average analyses of this material show about 35 to 40 per cent of metal retained on a 10-mesh screen with a binder composed of well-graded sand with clay in the proper proportions. The metal will all pass a 1-inch screen. This material has been used as it occurs locally and with the addition of washed gravel to increase the metal content where this runs low. It has given satisfactory results but can be used only where it is found within hauling distance, as the deposits are usually shallow and over comparatively small areas, and the cost of hauling for shipping would be prohibitive.

In addition, there are some deposits of clay gravel, but these also are small and can be used only when the road is within hauling distance. By the term "hauling distance" is meant the distance to which the material can be hauled with economy as compared with the cost of other materials delivered on the work.

With the exception of this limited supply of local material, practically all of the base construction for the southern section has been of clay-gravel shipped

from outside sources. This is due principally to two reasons, one being favorable freight rates, and the other the fact that during the early stages of road building in Georgia a great many miles of gravel roads were constructed and the original investment in these roads is saved in part by utilizing all the gravel remaining and adding a sufficient amount to secure the required thickness of base. In some cases where traffic has been comparatively light, it was found that siufficient gravel remained, and the asphalt surfacing was applied after reshaping without the addition of any material. The reshaping is usually accomplished by scarifying, then smoothing with heavy road graders, and compaction secured by traffic with almost constant machining. Where the irregularities are comparatively small, it is not always necessary to scarify, but the proper surface can be secured with a heavy road grader, providing the gravel has sufficient moisture. Where additional material is placed, it is necessary to scarify so that the old and new materials are bonded together. In any case, it is very necessary that all loose material be thoroughly compacted under traffic before the asphalt surfacing is added.

New Gravel Bases

In constructing new gravel bases, pit-run clay-gravel and artificially mixed gravel are used. The latter consists of washed gravel which has to be shipped, mixed with local clay, sand-clay or pebble soil. The mixing process requires great care to get a uniform mixture, but this method has the advantage that local materials can be used in part and freight saved.

It has been found most satisfactory to place the material in two layers, as a more thorough mix can be secured. Samples are taken at frequent intervals after the mixing process has been completed, and any places which do not show uniformity are remixed, material of either kind being added where necessary. Where suitable local material for binder can be had, this type is usually more economical. Both types are required to pass the same specifications, which require that all material pass a 1½-inch screen and at least 40 per cent be retained on a ¼-inch screen. The materials below this size must be well graded with sufficient amount of clay for binder.

As in the case of reshaping the old gravel, it is very important that the new gravel base be thoroughly compacted for the entire depth, and this is done by traffic with constant machining.

The clay-gravel has the same advantages enumerated above for the chert base in that it can be utilized as a wearing surface until a more permanent surfacing can be placed, and can also be placed immediately after the roadway is graded, and can be reshaped later after the embankment has settled and before the more permanent surfacing is added.

The gravel base is constructed to a compacted depth of from 6 to 8 inches, depending on the subgrade materials, and the cost varies from 70 cents to $1 per square yard.

Owing to the fact that the different types have as a rule been constructed in different sections where subgrade and weather conditions are different, and also to the fact that various types of asphalt surfacing have been used, it is not possible to draw any conclusion as yet regarding the relative merits, but it is thought that the results have been satisfactory with all types when all factors are taken into consideration.

A very close check on the methods of construction of the various base courses is being kept, as well as a study of the results obtained with different conditions in connection with each type of asphalt surfacing, and it is fully expected that definite conclusions can be made later from the observations and results.

ACKNOWLEDGMENT.—From a paper read before the Sixth Annual Asphalt Paving Conference at Atlanta, Ga.

Pedestrian Tunnels or Signals or Schoolboy Patrols for School Children's Safety?

THE modern city whose improvement program must include scientific traffic control comes inevitably to the problem of adequate protection for school children on the streets. To aid in solving this problem Los Angeles has expended some $350,000 for the construction of pedestrian tunnels at certain school street crossings.

But elsewhere a slavish following of this precedent might prove entirely impracticable. And before establishing a policy for the wholesale installation of such subways, those in whom responsibility is vested might well make some such inquiry as this into local conditions: Can full justice be done to the children by stressing the need of subways at the schools without equal stress being placed upon the need of protection for (a) children not living adjacent to the schools and for (b) all the children of the city at all times of the day and year?"

This, specifically, is the question which has been raised by H. M. Gould, Engineer in Charge of the Detroit Traffic Survey, after examining the Los Angeles remedy (reported in THE AMERICAN CITY, October, 1927, page 434) in the light of Detroit's present requirements. In so far as it concerns the school child exclusively, the question is of the advisability of reliance upon pedestrian tunnels without proper consideration being given to the residence distribution of the children with respect to their schools.

Summarizing facts and figures in Detroit, and conclusions to be drawn from these, Mr. Gould, in an article, "Pedestrian Regulation," *The Detroiter*, says:

"The trend toward the use of pedestrian subways at schools produces a concentrated type of protection, whereas, except for schools where only one heavy-traffic thoroughfare is involved, the trend should be toward a distributed type of protection utilizing to maximum efficiency automatic traffic signals, traffic policemen, school janitors and school patrols. In fact, it might be found that mobile school patrols, i.e., patrols that would collect the children by blocks, deliver them to the school and return them after school, would give a greater measure of protection than the fixed-post type of patrol.

"Assuming that Detroit has approximately 250 school sites and assuming one subway per school at a unit cost of $10,000, the total cost would be $2,500,000. This sum would purchase and install 3,570 automatic signals, or at the rate of 14 signals in the vicinity of each school and leave a surplus of 70 for emergencies. The same amount of money if placed at 5 per cent interest would produce an income of $125,000 per year, which would allow each school $500 per year to provide a small salary for the older boys who act as patrols at the various intersections, or would provide each school with a fund from which to provide uniforms, badges, banners, medals, etc., for these patrols."

EDITORIAL NOTE.—In the planning of new towns or of large real estate subdivisions, a method whereby children need cross no automobile thoroughfares on their way to and from school, as is proposed for Radburn, N. J., merits careful study. (See THE AMERICAN CITY for February, 1928, pages 152-154.)

The Paving of New Street, Baghdad, Iraq

ACCORDING to a recent letter from John Randolph, American Consul, Baghdad, Iraq, the most recent notable civic development in Baghdad has been the paving of New Street, Baghdad's principal thoroughfare. The money for this work, amounting to 400,000 rupees, equivalent to $145,454, was loaned by the national government to the municipal government. Repayment of the loan is to be made during the next ten years, beginning March 1, 1927, from municipal taxes, together with 5 per cent interest. New Street is about two miles long and runs through the city from north to south parallel to the river. During the last several years the street received several surfacings of gravel which worked down into the mud. On the top of the gravel-mud bed was laid a British reinforced concrete fabric; next was poured 4 inches of concrete with a top dressing of bitumen, and the result seems to be very satisfactory. Credit for the paving of New Street in record time is locally regarded as due largely to the ability and efficiency of E. T. Caparn, Municipal Engineer of Baghdad.

One of Baghdad's great street problems is the fact that the city is built on alluvial mud several hundred feet deep and the nearest gravel or stone is 75 miles away.

The Possibility of Natural Snow-Fences

By R. A. DROUGHT

DEPARTMENT OF HORTICULTURE, UNIVERSITY OF WISCONSIN

THE increasing demand for the open road during the winter months of the year, particularly near centers of population where the automobile is the common means of transportation, necessitates constructive thinking on the problems of snow removal and snow-drift prevention on the highways. The old adage, "Prevention is better than cure," may be given a 1928 translation or interpretation to the effect that it is more economic to prevent drifting snows on the roadways than it is to remove the snow after it has drifted and blocked traffic; for one effective snow-fence on a given piece of road will hold back the snow-drifts of an entire winter, thus not only eliminating the expenditure of time, effort, and money required to open up the highways after each heavy snow-storm, but guaranteeing the public, in advance, a clear road ahead.

While it is not possible to out-guess the elements every time, or to predict with mathematical accuracy the probable location and extent of snow-drifts, it is possible, nevertheless, to study prevailing winds and eddy currents—a knowledge of which, together with winter observations of drifting snows, will enable the highway commissioner, road patrolman, or farmer to know where to locate a snow-fence so as to be effective.

After the place for the snow-fence is decided upon, the type of snow-fence to be used should be selected. The artificial snow-fence is generally used, although the natural snow-fence of trees or of shrubs has many points to commend it. In figuring maintenance costs of highways the comparative costs of artificial and natural snow-fences should be carefully considered.

The type of collapsible snow-fence now used in Wisconsin costs the first year (including installation) about 20 cents per foot. Each year thereafter the cost is reduced to that of erecting and taking down—about 3 cents per foot. For a 300-foot stretch of highway this means an initial cost of $60 and a yearly maintenance cost of $9.

These figures, however, do not consider replacement costs, nor do they take account of the fact that snow-fences are, in actual practice, left in the fields for weeks in the spring after their usefulness has expired; nor does it consider another fact of actual practice, that of standing the snow-fences up against trees in September or early October, near the fields where they will be erected in November or early December. The replacement costs are, in practice in southeastern Wisconsin and probably in other places likewise, greater than necessary, because the snow-fences are subjected to unnecessary wear at times when their sphere of usefulness is nil.

A NATURAL SNOW-FENCE OF SHRUBBERY AND TREES
In this case additional right-of-way should be purchased to plant the shrubbery far enough back in the fields to keep the drifts away from the road

Although the snow-fence of shrubs involves the purchase of additional right-of-way for planting shrubbery far enough back in the fields so that snow will not fill the road cuts, the cost of natural snow-fences, initially or as a long-time proposition, is not prohibitive.

To plant a 300-foot stretch of highway with trees, 50 feet apart on both sides of the road (for snows will not drift under a canopy of trees), would cost approximately $28 or $2 a tree for cost of tree and planting. The maintenance cost would not exceed $7 for the second year, $3.50 for the third year, and $1.40 each for the four and fifth years. The cost of trees, planting and maintenance for a five-year period, then, would be $41.30. This averages 13 2/3 cents per linear foot for five years, while the initial cost and upkeep of a 300-foot artificial snow-fence for the same length of time is $96, or 32 cents per linear foot for 5 years.

The other type of natural snow-fence is that planted out with shrubs. The cost of a 300-foot stretch of roadway, planted with shrubs, would be a maximum of $40. figuring the shrubs set 3 feet apart on one side of the highway. The initial cost of three-quarters of an acre of land (a strip 300 x 100 feet), for shrub planting in southern Wisconsin would average $75 to $100, and it would be a *permanent* investment. The initial cost of a natural snow-fence of this type would then be a maximum of $140. Maintenance would be practically nil, and replacement would be unnecessary. The problem of removing drifting snow would be abandoned along with that of removing and replacing collapsible snow-fences. In addition, the strip of ground required for shrub fences might be used to advantage esthetically.

Considered, then, either as a temporary or as a long-time proposition, natural snow-fences are cheaper.

ACKNOWLEDGMENT.—From a paper read before the Annual Meeting of the International Association of Street Sanitation Officials, 1928.

Town Planning in Malaysia

THE Sixth Annual Report of the Department of Town Planning, Federated Malay States (1926), records marked advance in the preparation and execution of town planning and housing schemes and legislation in that rapidly growing country which produces a substantial portion of the world's tin and rubber supplies. All important towns are in course of improvement and development under various schemes approved by the state governments. The activities of the Department include many features of interest to modern town planners.

His Excellency the Governor of British North Borneo borrowed from the Federated Malay States the services of the Government Town Planner (Charles C. Reade, M.T.P.I.) during December to assist the Government in the laying-out of the principal ports, Jesselton and Sandakan. Before returning, Mr. Reade also visited the Philippine Islands to make an official report to the Government of the Federated Malay States on the development of hill stations there. British Malaya is developing two important hill stations, between four and five thousand feet above sea-level. The latest and largest area is Cameron's Highlands, situated in the heart of the main mountain range which forms the backbone of the Peninsula.

Parks and Playfields

A Mathematical Method of Determining Their Location, Size and Urgency

By GEORGE B. FORD

TECHNICAL ADVISORY CORPORATION, NEW YORK

THE accepted ideal standard is one acre of parks and playgrounds for each 100 inhabitants. A few cities, such as Washington, Kansas City, Minneapolis and Boston, have actually reached this ideal. Recreational specialists set as a practical working standard, one acre of park and play space for every 125 people.

It is found in practice that out of the total park and playground area in cities, one-third to two-fifths is actually in playfields, playground and school play yards. Thus if the remaining two-thirds to three-fifths of the total area is in parks, the average working standard would be one net park acre to 200 inhabitants.

Again, it is found that much, if not most, of the new park acreage must be outside of the built-up parts of the city; otherwise the new parks might be prohibitive in cost. As a matter of fact, in modern park systems, more than half of the park use by acreage is in park reservations outside of the built-up city. Thus, it is safe to say that 500 people and more per net park acre inside of the built-up areas is a fair standard.

Furthermore, open one-family, detached house districts use and actually need much less park acreage than other more congested parts of the city. Modern recreation practice encourages the development of park-like home grounds. This tends to decrease the public park acreage that would otherwise be needed. It may be said that park use and need varies inversely with the density of population. Thus, it may be assumed that from 500 to 1,000 people per net park acre is reasonable and logical for customary city conditions. On this basis many cities would at first thought appear to be well supplied with parks.

It is found in practice, however, that the maximum range of effectiveness of most parks is not over one mile, and the smaller the park the shorter its radius of usefulness. Even the largest city parks are of little use to people living much over a mile away.

Determining City Areas Effectively Served by City Parks

In order to determine just what parts of a city are or are not served by existing parks, a detailed study was made in Trenton, N. J., of the area effectively served by each existing park. These studies are shown in detail on the Public Parks and Playfield Program, 1927-1950, and the accompanying map, entitled Parks and Limits of Usefulness.

As will be seen by the table, a factor was chosen for each existing park, of somewhere between 500 and 1,000 people nearby that would normally be served by it. In the very open high-class suburban districts this factor was 1,000 people per park acre, while in the tenement districts it approached 500. Next, on the Population Distribution Map the population was counted off spirally out around each park, always within a maximum radius of a mile, until a population had been found which corresponded to the above-mentioned factor multiplied by the number of acres in the park. The limits of the area of use about each park are shown on the accompanying Parks and Limits of Usefulness Map.

It can now be seen at a glance that from one-third to two-fifths of the total

Note: For parks - Add 5,000 to 60,500 served in 1927 for effect of other public open spaces (see map). 70,000 unserved population in 1930 @ 700 people per acre = 100 A. needed. 35,000 more unserved population in 1950 @ 600 people per acre = 47 A. more. Only add 39.3 acres inside present city limits. Balance = 93.3 A. add outside.

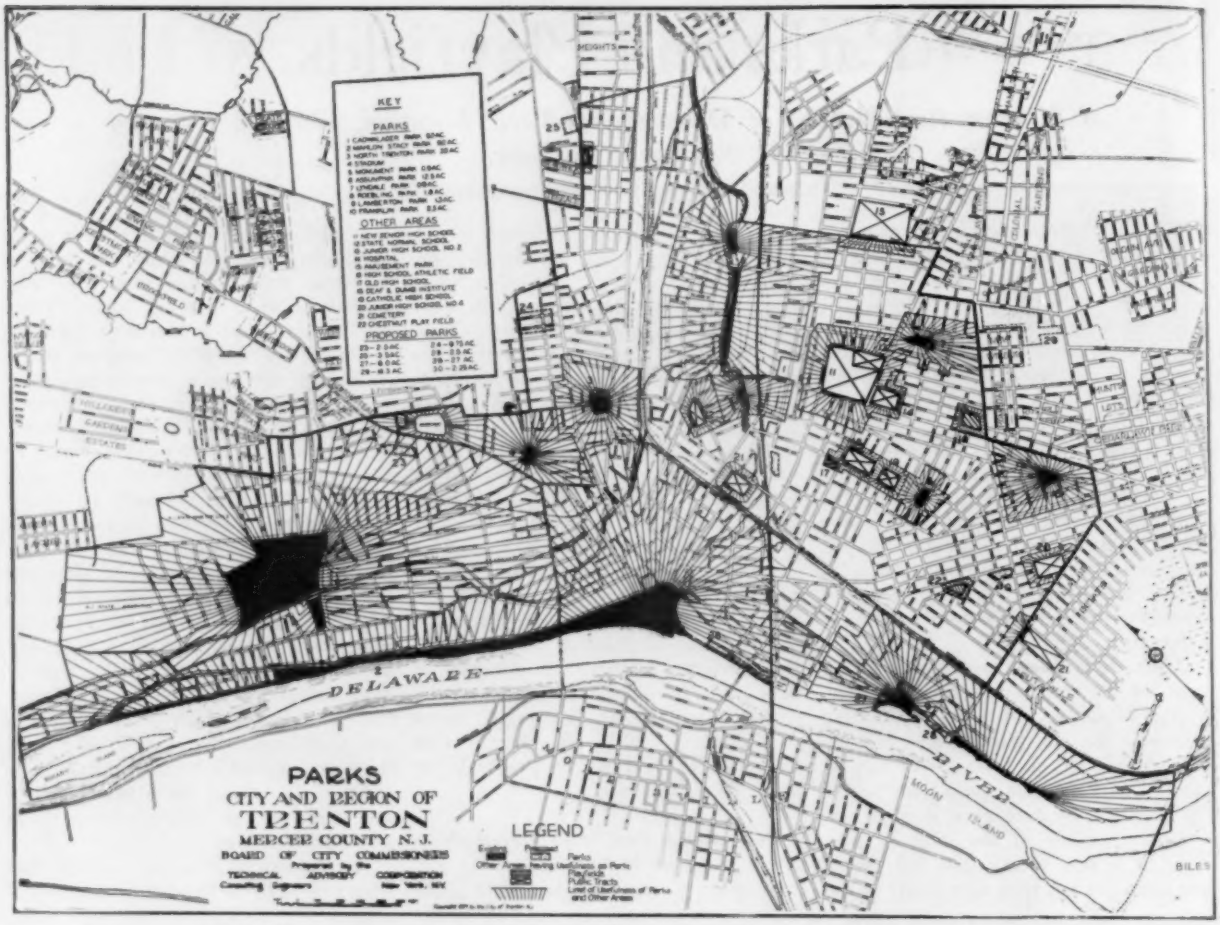
Note: For playfields - 63,500 unserved people today and 98,425 unserved in 1950 inside city limits. Need today @ 2,000 people per acre 66.2-34.8 = 31.4 A. Need in 1950 @ 2,000 people per acre 90-34.8 = 55.2 A.

PUBLIC PARK AND PLAYFIELD PROGRAM

TRENTON, N.J. 1927-1950

Board of City Commissioners
Technical Advisory Corporation
Consulting Engineers
New York City

Name or Location	Acreage in Tract		Population		Radius Served (miles)	Available Acreage That Can Be Added By					Estimated Cost of Improvements		
	Gross	Net	Per Park Acre	Served Now		1930	1935	1940	1945	1950	Property	Construction	Total Cost
PARKS													
Cadwalader	101.0	93.7	900	17,500	1.00								
Mahlon Stacy	82.4	82.4	600	24,000	.75								
N.Trenton	4.4	3.3	600	2,000	.25								
Assunpink	17.9	12.3	700	8,750	.40		10.0	2.0			$ 65,000	$15,000	$ 80,000
Franklin	2.6	2.5	800	2,000	.35								
Monument	0.9	0.9	500	450	.10								
Roebling	1.8	1.8	500	900	.15								
Lamberton	6.7	5.8	700	4,100	.35			2.7		8.0	45,000	3,000	48,000
Lyndale	2.0	0.9	800	720	.20								
Along John Fitch Way	4.0							5.5			76,000	8,000	84,000
Grand St. & Virginia Ave.							2.25				68,000	4,000	72,000
Paul Ave. & George St.									9.75		64,000	5,000	69,000
Hamilton & Chestnut Aves.			600		.25	7.0					90,000	10,000	100,000
Lincoln Highway at Plum St.										3.5	32,500	3,000	35,500
Oliver Ave. & Mellon St.								2.5			43,570	3,000	46,570
Olden Ave. at Liberty St.										16.3	15,000	2,000	17,000
Totals	223.7	203.5		60,420		7.0	12.25	12.7	9.75	27.8	$499,070	$53,000	$552,070
PLAYFIELDS													
Chestnut		1.3	1,500	1,950	.20								
Laurel Place		0.9	1,900	1,725	.10								
Havens		3.74	1,500	5,600	.40		0.75				$10,000	$ 1,000	$ 11,000
In Cadwalader Park		7.3	2,300	16,800	1.00								
In N.Trenton Park		1.1	1,700	1,850	.25								
In Assunpink Park		5.6	1,900	10,700	.60								
In Franklin Park		0.1	2,100	210	.10								
In Lamberton Park		0.9	1,900	1,710	.30								
In Lyndale Park		1.1	2,100	2,310	.20								
High School Athletic Field		3.74	2,300	8,700	.40								
State Athletic Field		2.4	1,700	4,100	.25								
Stadium		6.6	1,900	12,500	.40								
Division & College Sts.							3.0				60,000	5,000	65,000
Y.M.C.A.Field										3.5	22,500	5,000	27,500
Lalor and Liberty Sts.								10.0			12,500	3,000	15,500
Olden Ave. & Liberty St.									6.0		15,000	3,000	18,000
Lincoln Highway at Plum St.							5.0				20,000	3,000	23,000
Amer. Bridge Baseball Field									3.5		35,000	2,000	37,000
Oliver Ave. & Mellon St.								3.5			10,000	2,000	12,000
Totals		34.78		68,155			8.75	13.5	9.5	3.5	$185,000	$24,000	$209,000
GRAND TOTALS		238.38				7.0	21.00	26.2	19.25	31.3	$684,070	$77,000	$761,070



PARKS AND THEIR LIMITS OF USEFULNESS IN THE CITY AND REGION OF TRENTON, N. J.

area inside the Trenton city limits lies outside any of these service belts about parks. A comparison of these unserved areas with their population gives the total park acreage needed in addition to the existing parks in order to take care of the unserved present population.

The same principle is applied to the additional future population of the city up to 1950, as shown by the Population Distribution Map, in order to determine the additional park acreage that will be needed between today and 1950. As a matter of fact, in Trenton only about 60,000 people out of 135,000 are actually served by the existing parks. Therefore, 100 additional acres of park are needed today and 47 more acres by 1950.

A careful study was next made of the unserved parts of the city, to see what could be culled out in the way of sites for new parks without having to pay excessive sums for land or existing buildings. At best, a maximum of 69.5 acres seemed to be all that it is practicable to acquire inside the city limits or immediately bordering them. The rest would have to be acquired outside the present city limits.

Importance of School Play Yards

School play yards should take care of most of the play needs of all children and youths of school age. They comprise from 20 to 25 per cent of the population. Also, it is found in practice that hardly more than 10 per cent of the population above school age need or want play facilities. In view of experience, it would seem fair to assume that not more than one-fifth to one-third of this 10 per cent would want to use playfields, especially public playfields, at any one time. Thus, public playfield acreage, other than school play yards, is needed to serve at any one time from 2 to 3 per cent of the total population.

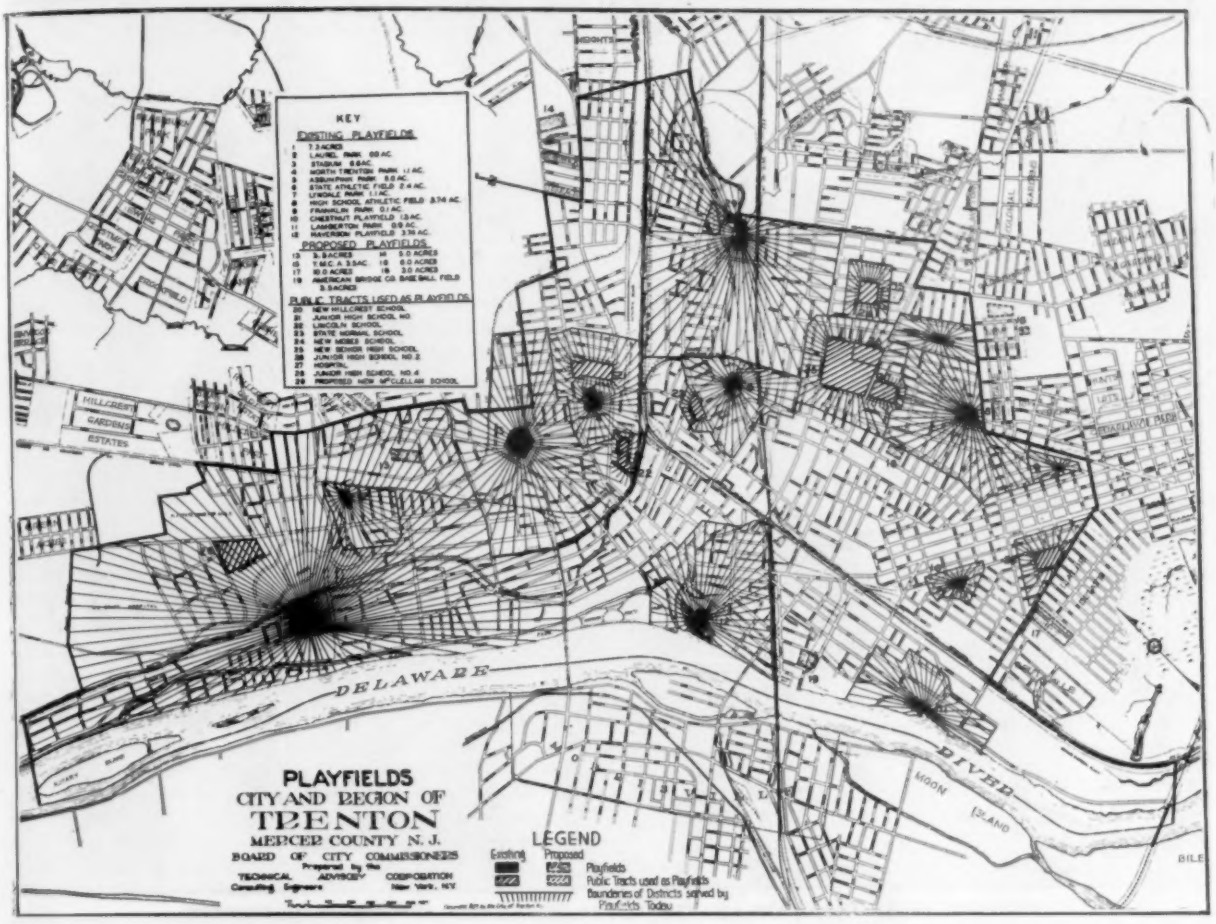
It is found in practice that adults when playing need from 500 to 1,000 square feet net of space to play in. Recreational experts incline toward the latter figure. Two to three per cent of 1,000 square feet equals 20 to 30 square feet average per person of the total population, which would equal 1,950 people per play acre. Thus, from 1,500 to 2,500 people per net play acre in public playfields, other than school play yards, is a reasonable allowance. In open, suburban one-family home districts this factor, as indicated on the accompanying table and map, would approach 2,500 people, while in the congested tenement districts it would drop to nearer 1,500.

Trenton now has inside the city limits 35 net acres of playfields or play areas in parks under the Park Department in addition to all school play yards and fields. This equals about 3,700 people per net public play acre. In other words, Trenton has only about one-half of the total acreage in playfields that it should have, to meet normal standards.

Limits of Usefulness of Playfields

A study of the Public Park and Playfield Program, 1927-1950, and of the accompanying map entitled Playfields and Limits of Usefulness, shows just what areas are served and what are not served by existing public playfields. The method of determining the area actually served is similar to that above described for parks.

Again, it has been assumed, as is borne out in practice, that under normal conditions a playfield is of little service to those who live more than a mile away from it. The calculations show that less than 70,000 of the existing population are now served by public playfields. This means that today there is urgent need of 31.4 additional acres of playfields and that by 1950 there will be a distinct need of 23.8 additional acres of playfields.



PLAYFIELDS AND THEIR LIMITS OF USEFULNESS IN THE CITY AND REGION OF TRENTON

A careful grooming of available sites within the parts of the city now unserved by adequate playfields shows that, by giving reasonable attention to economy, it is possible to cull out 35.25 net playfield acres inside or just outside of the present city limits. This leaves 20 additional play acres to be acquired farther out in the county by 1950. The approximate date by which each needed park or playfield should be acquired can be readily determined by comparing the present population with the 1950 population within the radius of service of the park or playfield.

Computing Space Per Pupil Needed in School Playgrounds

School play yards, adequate in size to serve the play needs of all children and youths of school age, should be provided as a part of the school expansion program. The districts served will thus correspond to the school districts. In practice the average play space actually occupied by each child of elementary school age is a little less than 100 square feet. Experience shows that three-quarters of the children of a given school should be able to play at the same time. Thus 75 square feet of play space should be provided for each child enrolled. Junior high school pupils need from 100 to 500 square feet per pupil actually playing. In practice this works out to a need of about 100 square feet of play space for each pupil enrolled. Senior high school students need from 200 to 1,000 square feet of play space for each person actually playing. However, the proportion playing at any one time is much less than in the lower schools. Not more than one-half to one-quarter play at any one time. Therefore, 200 square feet of play space per student enrolled should be ample.

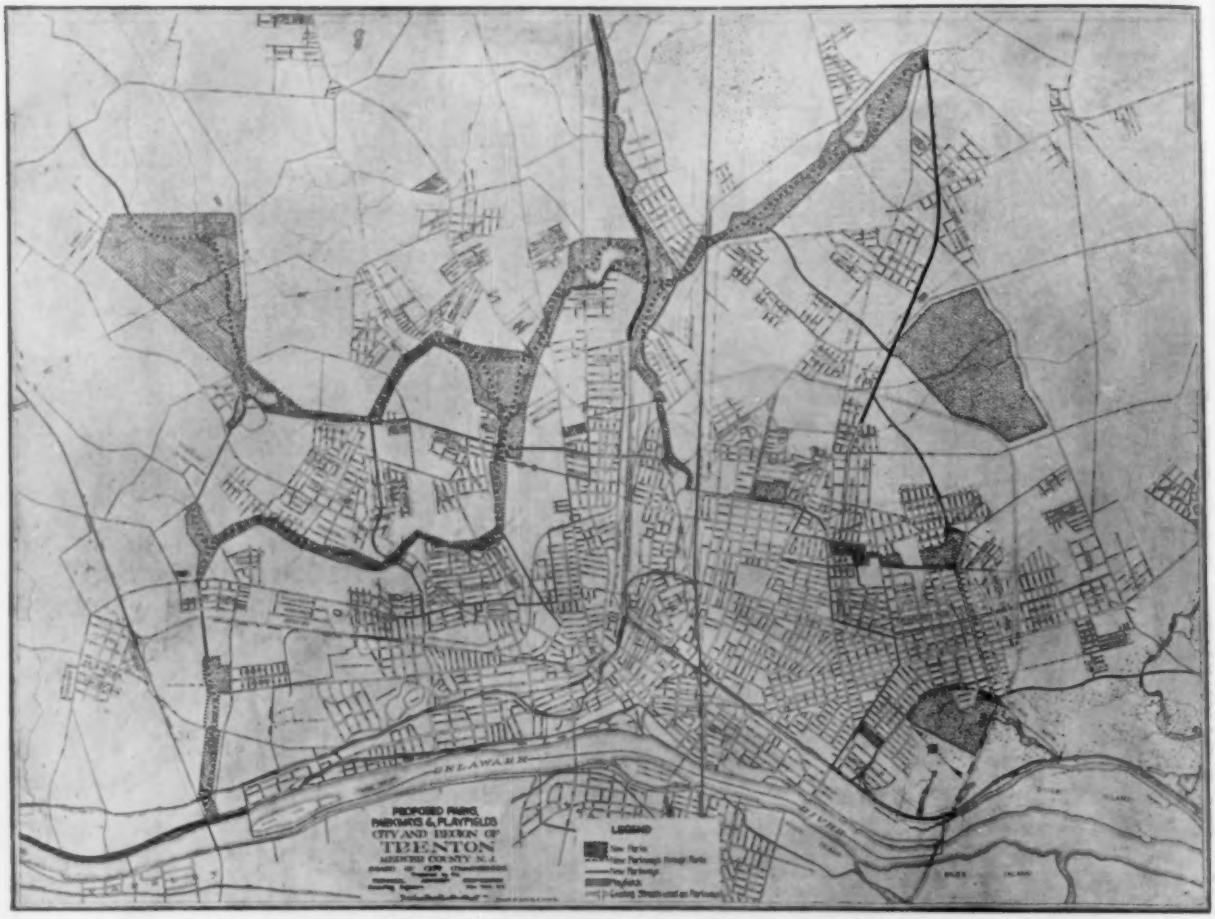
Acquiring Outlying Tracts for Park and Playfield Areas

It is obvious that it is not feasible to provide inside the built-up city nearly all of the park and playfield area which the city inhabitants need. On the other hand, the rapidly growing outlying subdivisions are more and more using up the available open spaces near by. If most cities are to keep up to the best park and playfield standards, they have no choice but to acquire such outlying tracts as are outstandingly desirable for park or playfield purposes while they still have the opportunity. It is particularly desirable to provide park or reservation and playfield space within easy walking distance of every outlying community and to reserve against future demand further areas within easy walking distance of the outlying suburbs which will probably be built up later on. The size and urgency of each of these tracts can be fixed roughly by the method previously described.

The accompanying Trenton map entitled Proposed Parks, Parkways and Playfields indicates all areas that would particularly lend themselves to park and playfield use. The total acreage is much greater than will be actually needed, but it is fair to assume that the surplus will have been absorbed in subdivisions before it can possibly be acquired by park or playfield purposes.

This distribution would conserve all of the most interesting natural features. It would provide parkways that would give direct access to almost every part of the Trenton region and it would create a vast amount of attractive new property fronting on or near these proposed parks or parkways.

Parks, parkways and playfields as shown on the accompanying map for the outlying region are strongly recommended, but only in a general way. It is highly probable that, when a county planning or park commission studies this



PROPOSED PARKS, PARKWAYS AND PLAYFIELDS IN THE CITY AND REGION OF TRENTON

problem intensively, it will be found that these proposed locations and park limits can be considerably improved upon, that certain parts of the proposed system can be suppressed and others substituted, that the location of parkways can be much improved, and that possibly the proposed reservations can be shifted to entirely different sites. However, such a system is recommended as suggestive to hold until an appropriate commission can make a more definite study.

A Museum That Aids in Democratizing Art

"*A MUSEUM is as much a necessity as a music hall, a library, or a school. It is a source of education, of recreation, and of inspiration. A love of the beautiful things of life can be directed and increased by means of a museum of art.*"

This is not a highfalutin opinion of some impractical idealist. It is the climax statement of a report of progress and accomplishment from one of the most interesting among America's newer public art centers, the High Museum of Atlanta, Ga. This report, in the form of an article by John Howard Payne, President of the Atlanta Art Association, is given conspicuous place in a recent special art edition of *The City Builder* (organ of the Atlanta Chamber of Commerce, Extension Committee).

Plans reported as now under way for extending the scope and function of the museum in order that it may take a still more important part in the democratic life of the city, include a liaison with the art department of the public schools, also lectures and free classes for children. Announcement is made of the employment of a professional museum director, R. J. McKinney, recently with the Municipal Museum of Davenport, Iowa, who will carry on and expand the Art Association's permanent educational policy. This policy is "to display through the museum pictures and sculptures to gratify those who love art, and seek to encourage and quicken the art spirit in the community, foster local talent, and stimulate the desire for study." Mr. Payne adds:

"We seek to show the people of Atlanta that there is something worth having besides material wealth, and to prove to them the moral and spiritual advantages of an art gallery."

The High Museum of Art was made possible in 1926 by the gift to the Atlanta Art Association of a beautiful and spacious residence, formerly the home of Mrs. J. M. High. It is supported by an endowment fund, raised by a group of citizens who wished to match Mrs. High's generosity by their own, and by fees paid by the Association's 450 members.*

Atlanta has other art activities of civic nature, a number of which are described in *The Bulletin*, which remarks editorially that "a number of our leading men and women are giving themselves in unsurpassed abandon to this engaging ideal of keeping before our people opportunities of making our homes more beautiful, our streets more beautiful, our public buildings more beautiful, our parks more beautiful, —all that, and more—to give expression by pen and brush, by word and by sympathy to the inward urge to personally have a part in setting forth the great cause of art."

Many cities are finding, as Atlanta has found, that art study is becoming increasingly indispensable to a liberal education, that it affords one of the highest forms of recreation, and enriches the spiritual life manyfold. The community museum has proved a not impossible achievement even in little cities. The American Association of Museums is a source of information and aid to those interested.

---

* See THE AMERICAN CITY, December 1926, page 824, for an account of this gift.

Curing Cement-Concrete Pavement in Los Angeles

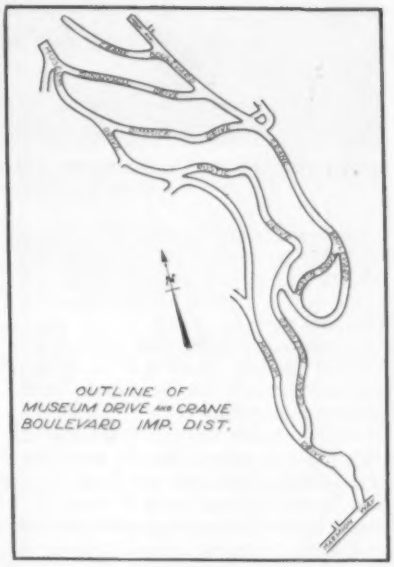
By JOHN C. SHAW
CITY ENGINEER, LOS ANGELES, CALIF.

IN connection with the laying of cement-concrete pavements, it has in the past been the practice in Los Angeles to cure the pavement for a period of ten days with a covering of wet earth. This, of course, requires the contractor to dispose of excess excavation at two different times during the progress of the work, which, to some contractors, is objectionable. Many attempts have been made to devise a method which will more quickly, easily and efficiently cure concrete. A new method of curing concrete, called the Hunt process, has been devised, which has been used successfully on several paving jobs in Los Angeles, notably in the paving of the streets in the Museum Drive and Crane Boulevard improvement district.

The streets in this improvement are as indicated on the accompanying sketch and are located on a steep hillside with Museum Drive as the main outlet. The improvement consisted of the construction of a 6-inch cement-concrete pavement, reinforced concrete curb, integral with the pavement, concrete retaining walls, concrete sidewalks, sanitary sewers and connections, and water-mains and connections. The work was done under the Street Improvement Act of 1911. It was originally designed by a firm of private engineers, but was later checked and re-designed by the City Engineer's office in order to provide space between the dedicated street line and the curb line for poles, fire-plugs, etc. The roadways in this district are mostly 20 feet wide, of 26-foot dedications. The laying-out of the plans was made difficult because of steep hillsides with steep grades, difficult intersections, seemingly impossible locations, houses and driveways to consider, and poor geological formations.

The Geo. R. Curtis Paving Co. was the contractor on this improvement. The quantities and costs are as follows:

18,232	cubic yard cut, complete }	$25,000.00
14,000	cubic yard fill, complete }	
284,715	square feet, 6-inch concrete paving @	0.22
23,875	lineal feet, reinforced integral curb @	0.55
24,809	square feet sidewalk @	0.15
1,296	lineal feet guard-rail, complete	2,000.00
1,296	lineal feet reinforced concrete retaining wall, complete	30,000.00
	Storm drain, complete	45,000.00
	Sanitary sewer, complete	35,000.00
	Total bid price	221,678.00



Method of Curing

The Hunt process of curing is a new method and was used by the contractor in preference to the usual method because of the difficulty in moving the dirt and of keeping the earth cover wet on steep grades. There is only one main entrance to this district, namely, Museum Drive, and the contractor planned his work so as to keep this entrance open without being required to shut down any part of the work. The Hunt process of curing was an important factor in this plan.

After the pavement was finished by belting and floating, it was sealed with a specially prepared bituminous coating. This coating was sprayed on by means of a pressure tank and long-handled nozzles. These nozzles were specially handy, since in several locations work could be done from only one side of the street. A thick layer of the coating was applied to the surface of the concrete, the operator being careful to cover every part of the pavement. The coating dried out quickly and formed a thin sheet of asphalt over the pavement, thereby sealing in all the moisture. The contractor was then through with his pavement except for placing the proper barricades and cleaning up along the edges, and such other miscellaneous work as is left on any job. There was no scraping-off of mud and dirt, flushing of the pavement, patching places ruined by the scraper, or waiting for the pavement to dry before applying the color coat, and no color coat to be applied, all because of the new method adopted for curing.

MUSEUM DRIVE, A CONCRETE ROAD TREATED BY THE HUNT PROCESS
Note the broom marks still showing on the concrete

Before this curing process was allowed to be used in Los Angeles street work, the testing laboratory of the Los Angeles Engineering Department made comparative tests of the strength of the pavement resulting from the various methods of curing. These test pavements were constructed on Beverly Boulevard in the Meline Riviera Tract. An extract from this report follows:

"Four successive batches of concrete, proportioned and mixed to make normal Specification No. 129 concrete pavement, were placed on the subgrade, and each carefully divided half to either end of the test section. Two pairs of 2-foot, 6-inch by 2-foot, 6-inch slabs were made from the first batch. Beneath each of these slabs two 1-inch steel straps were laid about 15 inches apart on the subbase for flexural test bearing surface.

"The entire test section was finished in normal order with and like the adjacent

APPLYING ASPHALT BY THE HUNT PROCESS TO CURE A CONCRETE ROAD NEAR THE CITY HALL IN PASADENA, CALIF.

concrete pavement, between 10 A. M. and 11 A. M. At 12:35 P. M. the Hunt bituminous process was applied to the area at the rate of 1 gallon to 183 square feet. The next day the portion of the section for moist earth curing was covered with soil and ponded. Each day for 12 days this was watered. On September 13 the earth was removed.

"On September 19 and September 21, 1927, the two pairs of blocks were lifted out. The subbase was uniformly moist. Four beams, approximately 6 inches by 8 inches by 30 inches, were wire-cut from each type of curing. On September 27 5½-inch cores were drilled in the central test area, five from each process and three from the area with no curing."

The results showed that the Hunt process of curing produced a concrete of strength equal to that obtained by the usual method of curing by banking and puddling. The ease of applying the pavement coating in no way compares with the trouble and difficulties encountered in the old curing process, and, although this is a patented process, the cost is probably no more than the cost of banking and puddling, as the new method eliminates the washing and flushing of the pavement and darkens the pavement, so that no color coat need be added after the work is done.

ACKNOWLEDGMENT.—Prepared by permission from an article appearing in *Western Construction News*.

City Planning Commissions the Modern Successors to Walls and Moats

THE importance of intelligent and effective control by a city of its suburban area, either by annexation or by city planning under authority of state law, is emphasized by D. B. Davis, City Engineer of Richmond, Ind., in a paper on "Civic Forethought," delivered at the 1928 Road School at Purdue University, from which the following excerpts are quoted:

"There is a divided opinion regarding the advisability of adding to the city by annexation. I firmly believe in the idea of a city's protecting itself by having a wide strip of open land about its developed territory, that it may exercise the necessary control upon its future growth. Notwithstanding the control [in Indiana] of platting by the city plan commissions within a radius of five miles, the proper and complete control cannot be had when the land lies outside the city limits.

"European cities formerly protected themselves by high walls and deep moats, but these now are occupied by circumferential boulevards following the route of these old walls. Civilized cities are putting their dependence in city plan commissions instead of walls and moats.

"If we are to develop a high standard of living, all territory to be used for city purposes should at once receive the improvements to the land necessary for the use designed.

"Wherever a city exists which is moving forward, there is to be found a horde of promoters ready to encourage the owners of open land to subdivide it for speculative purposes. Many acres of good productive farm land are each year uselessly divided into lots, to lie vacant for years to come, yielding only an abundant crop of rank, obnoxious weeds to be cut and burned.

"Subdivisions laid out without improvements are naturally of lower value and consequently attract a lower class of structures than would come with the natural growth of the city. This practice also permits a scattered development, requiring a large amount of pavements, street lights and public utilities to serve a limited population.

"If promoters were required to put up the necessary funds for the improvements to each lot, there would be less inclination to subdivide unless they could see a real demand and sale for the lots.

"It is just and proper for a city to expand, but it should be done compactly and uniformly. . . .

Planting of Shade Trees

"Three years ago the Board of Works of Richmond realized that if the beauty of its new streets were to match up with those of the old city, they must take some action to have shade trees planted. Consequently, with each new street improvement, the item of shade trees is included. These trees are planted approximately 35 feet apart and are of the same variety throughout the improvement. A three-year guarantee is required.

"The importance of street trees is far-reaching. Their presence is the beauty of the street. Their absence causes defects to show up, such as buildings in disrepair, and unsightly structures, which are seldom noticed when shade trees are present.

"After the setting of shade trees, there is still a deep responsibility to the city for the care of them. Many cities have recognized this and have inaugurated the necessary rules and organization for city forestry work.

Forethought Which Saved Money

"Three years ago, the Richmond City Plan Commission secured options on all but one piece of land bordering a small creek just west of the corporation line. This land was low and mostly unsuitabe for residences, but would make excellent park property. They knew it was but a year or so before the city would extend its boundaries, and this creek would act as the natural watercourse for the storm water for that district. The land was purchased for $100 per acre, except one piece which had to be condemned at $150 per acre.

"Since then the city has annexed territory a half-mile west of this park land, and we are about to install a sanitary sewer 8 miles long over the entire district. Many buildings are being erected and soon it will be a regular part of the city.

"If the city had not bought the low land where the creek flows, we would have been required to construct a storm sewer three-quarters of a mile long, approximately 6½ feet in diameter, to care for the drainage. In other words, the city secured 35 acres for a park, which lies in the center of a residence district, for approximately $3,500 and saved $40,000 on a storm drain.

"A recent street widening finally consummated cost 15 per cent more by deferring it three years. This was caused by the district's getting a factory and values increasing. The thing had been foreseen and proposed early while values remained low, but was retarded by objections.

"Individuals and cities should profit not only by their own but by observing others' mistakes. Civic progress is like a relay race; the work of one administration starts off where a preceding one leaves it; if it can become coordinated, real results will follow.

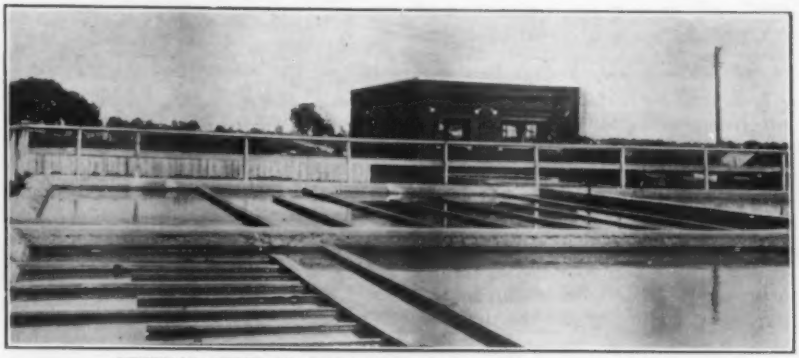
"These accomplishments cannot be attained, however, by rubbing an Aladdin's lamp; like human character, it must be started early, persisted in and encouraged to attain the ultimate ideal.

"Knowing, as we do, that environment will determine to an extent the conduct and well-being of the people, it is our duty, as public servants, to raise the standard as high as we can, and though we cannot see the consummation of our plans, our example may prove as an incentive to those who follow after us."

Advertising Water-Works

By PEARL D. FIFE
SUPERINTENDENT OF FILTRATION, KIRKSVILLE, MO.

THERE is no business with so large an amount of money invested in it that spends such a small sum for advertising as the water-works industry, composed of water departments and water companies. This may be explained in part by the fact that a large percentage of the water-works assume a "take it or leave it" attitude, reasoning that everyone knows he can have water if he wants it, and he must have it, hence a publicity campaign is a waste of money.



GENERAL VIEW OF THE KIRKSVILLE FILTRATION PLANT

Advertising Necessary to Success in Any Endeavor

Study the business organizations of your own city. How many successful business enterprises are there that do not use various forms of advertising? The water-works official may reply that the water department or water company has no competition and hence advertising is not necessary. It is true that there is no competition, but how much does the average citizen know about the operation of the water-works? Does he realize the responsibility that rests on the shoulders of the men whose duty it is to see that every drop of water that reaches the user is free of disease germs? The consumer will appreciate an explanation of the operation of the plant from raw water to faucet. Furthermore, he should know that the water produced in a modern plant is much safer and better than the average well water. Such information is bound to result in increased customers and increased consumption by old customers.

We have definitely proved this in our plant at Kirksville. Many users have told us that since they saw how the plant was operated, how clean the buildings were, and what care was taken to produce pure water, after reading the articles in the local papers, giving all the details of operation, many of them who had been using well and spring water became regular consumers of city water.

More Knowledge for the Public

In the short span of an average lifetime we have seen a remarkable transformation in the treatment of water, especially as related to bacteriology. Diseases were once called plagues and their origins were unknown. Now, scientists have proved that certain diseases are caused by specific micro-organisms and have traced their method of travel from place to place. There are persons even yet who do not realize the extreme caution that is continually necessary to prevent the spread of disease through drinking-water. An educational program placed before the public in a manner that they would understand is of great value both in increased revenue and in decreased transmission of water-borne disease.

The main value of the publicity campaign is, of course, the increased consumption that is certain to follow a better understanding of the reasons for the various processes in the operation of a modern water plant. In order to accomplish this it is necessary to conduct a campaign that will cover all the phases of plant operation and will present them in such a way that the layman can readily grasp their meaning and significance. This may be done by regular paid advertising, by talks before clubs, such as Kiwanis, Rotary, the Sojourners and others, and by public demonstrations at the plant where visitors are welcome.

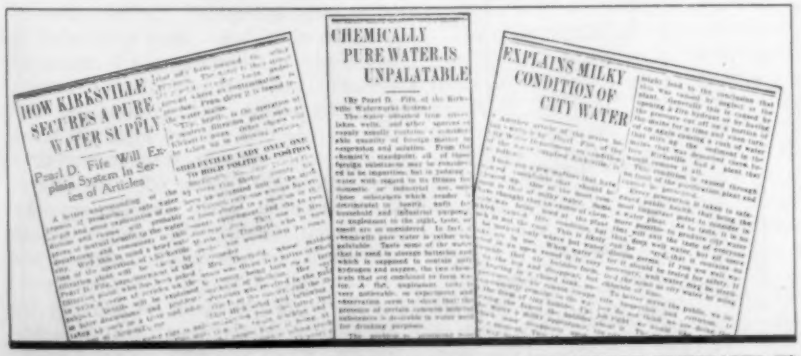
A Clean Plant a Good Advertisement

The plant should be kept as clean as the best kitchen. The grounds should be well kept, with shade trees and flowerbeds to add to the beauty of the water in the various basins. If possible, a place should be provided for those who care to spend an occasional evening in the grounds, enjoying a picnic supper, and every effort should be made to induce the public to become more familiar with the plant. The operators should be neatly dressed and courteous to visitors and should be able to explain the operation of the plant and to intelligently answer the many questions that visitors always ask. This will create public understanding and a confidence that will be of inestimable value.

Better Health via the Water Route

Knowledge will stimulate an interest in this public utility. Once the public understand a thing, they are quick to show their appreciation, and this may be very valuable when the time comes to vote bonds for necessary expansion and improvement.

An increased use of city water promotes the health of the community by decreasing water-borne diseases. If people are induced to avoid questionable water-supplies, the typhoid rate is bound to decrease. By continually preaching that well water, especially in the congested district, is unsafe, we have not only reduced the typhoid rate, but have increased our water revenues as well.


HOW KIRKSVILLE SECURES A PURE WATER SUPPLY

Pearl D. Fife Will Explain System In Series of Articles

CHEMICALLY PURE WATER IS UNPALATABLE

EXPLAINS MILKY CONDITION OF CITY WATER

TYPICAL EDUCATIONAL ARTICLES PUBLISHED IN THE KIRKSVILLE NEWSPAPER IN PEARL D. FIFE'S PUBLICITY CAMPAIGN

Status of Employee Benefited

Publicity also benefits the water-works

employee by drawing attention to his responsibility and qualifications—which will mean more permanent positions and better remuneration. It also removes his job—to a certain extent, at least—from politics, for when a man has proved himself capable and trustworthy, the public will know it and a change of administration is not likely to affect him.

Good Water-Supply Brings Business

A dependable water-supply is a good advertisement for any city and an inducement for new factories and homes. I know personally of one city that lost more than one industry because the people would not vote bonds to modernize their water plant and at the same time the property owners were paying enough increased insurance due to inadequate fire protection to pay for the improvement needed. The reason was plain enough—they simply did not understand the situation. A new administration completely reversed the situation by a series of articles in the papers, explaining the difficulty and asking the support of the taxpayer in voting the necessary bonds. Now this city has a fine water plant and an up-to-date fire department, all obtained by a bit of common sense with judicious publicity.

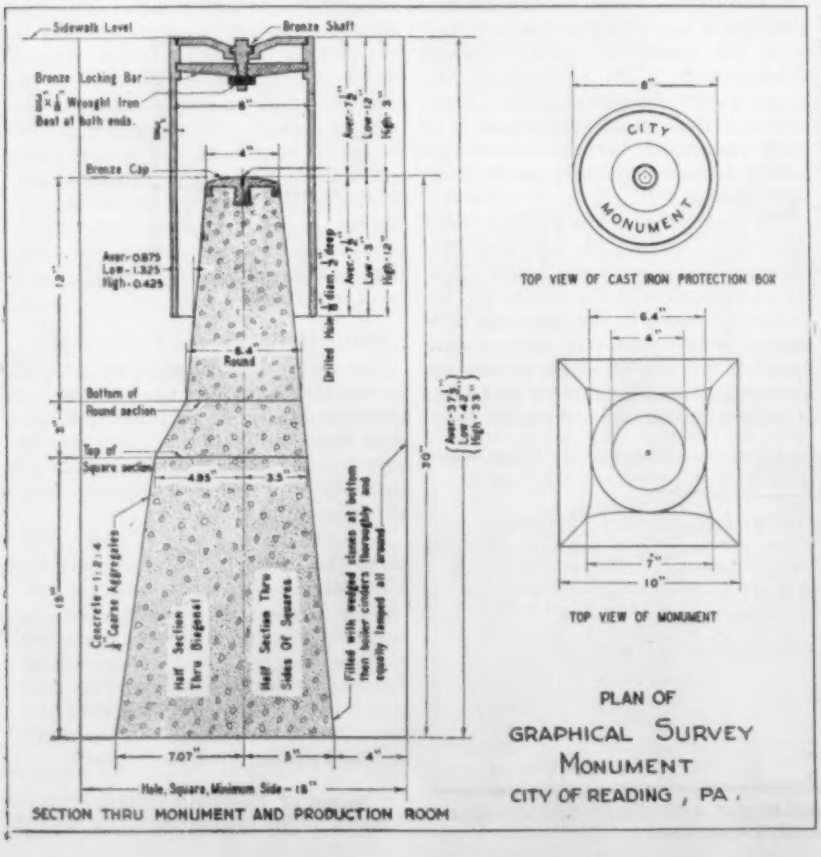
Good-Will Helps Revenue

Finally, it is just plain good business to advertise anything good. Water is more than a liquid with which to sprinkle the streets and wash automobiles. It is a food and deserves the utmost attention. Then, too, the water department or company is interested in the increased revenue that publicity is sure to bring. Therefore, a full understanding and complete confidence on the part of the consumer are necessary. These can only be obtained and held by an open policy of continually keeping the public informed of the activities of the water-works through the medium of a publicity program running throughout the year, the value of which is recognized by every successful business enterprise.

ACKNOWLEDGMENT.—Prepared from a paper presented before the Third Annual Meeting of the Missouri Conference on Water Purification.

A Well-designed Topographical Survey Monument

THE accompanying plan shows the details of construction of the topographical survey monument adopted and used by the city of Reading, Pa., to mark street alignment and bench-mark elevations. E. Clinton Weber, City Engineer, calls attention to the principal features connected with this design, which may be readily noted on the plan. The base is 10 inches square, presenting a bedding surface of more than six times the area heretofore provided by the 4-inch square base of the ordinary street monument. The depth of the monument, coupled with its tapering sides, prevents its being lifted by the action of frost.



The monument is made square in cross-section throughout its bottom half to permit the wedging of stones all around between the sides of the monument and the sides of the hole dug for its reception. The bottom half of the monument is a frustrum of a square pyramid, tapering from a side of 10 inches at the bottom to 7 inches at the top. The top section of the monument is a frustrum of a cone tapering from a diameter of 6.4 inches at the bottom to 4 inches at the top for a height of 12 inches. This shape was adopted to permit the protection box to be raised, lowered or turned without disturbing the monument.

The mid-section of the monument is 3 inches in height and changes gradually from a circular to a square cross-section. Four deformed steel reinforcing bars not shown in the drawing are inserted throughout the depth of the monument. The space between the sides of the hole dug for the monument and the cast iron protection box and monument, not occupied by the wedging stones, is filled with boiler cinders, thoroughly and evenly tamped into position up to the sidewalk paving or to the proposed sidewalk elevation.

The monument and protection box when first placed in position are set in the mean position shown on the plan, thus permitting the lowering or raising of the sidewalk level 4½ inches either way without disturbing the monument. The protection box is flexible enough to permit its tilting to conform to the slope of the sidewalk.

The top of the monument is made of Tobin bronze with a hole drilled into its center for the purpose of marking the alignment. The top of the bronze cap is convex in shape so as to present but one point, the highest, to the bottom of the leveling rod placed thereon when running levels. The elevation of the monument when once established is not likely to be changed by means of abrasion. Old-time monuments are worn down by traffic, and portions are frequently chipped off the tops and sides and in many instances the entire tops are completely broken off. No lateral disturbance is likely to displace the monument, because the protection box will usually take care of any disturbance of this kind. The monument and protection boxes are made for the city by the Reading Meter Repair Co., of Reading, Pa., which generally carries a quantity of them on hand.

Adapting a Distribution System to a New Source of Supply

By P. S. WILSON

SUPERINTENDENT OF OPERATION, COMMUNITY WATER SERVICE CO., NEW YORK CITY

THE New Rochelle Water Co. serves a territory of about 18 square miles comprising the residential communities of New Rochelle, Pelham Manor, North Pelham, Bronxville, Tuckahoe and Eastchester, N. Y., with a total population of about 75,000.

These communities, situated in the Westchester County suburbs of New York City and on Long Island Sound, have experienced a uniformly sustained rate of growth which is equaled in few places. The number of customers served by the New Rochelle Water Co. has nearly doubled each ten years for the past forty years and shows every evidence of continuing to increase at a high rate. This rapid growth, together with the rugged and irregular topography of the territory included, forms the principal problems that have been encountered. Elevations ranging from sea-level to about 300 feet are included. Figure 1, a reproduction of a portion of a United States Geological Survey map, shows the extent of the territory and its general topography. It will be noted that it is traversed by the valleys of the Bronx River and the Hutchinson River, as well as having a general slope towards the Sound and pronounced local irregularities.

Sources of Supply

The company has in the past obtained its supply of water from four impounding reservoirs situated on small streams, the watersheds of which are partly within the territory served. The capacity of these reservoirs was exceeded in 1919 and a connection was made with New York City's Catskill Aqueduct, through which increasing quantities of water have been purchased each year. At present about 30 per cent of the water is so purchased.

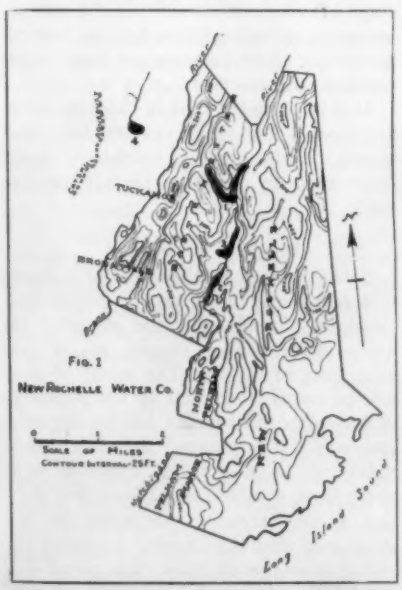


FIG. 1
NEW ROCHELLE WATER CO.

THE TERRITORY INVOLVED, AND ITS TOPOGRAPHY

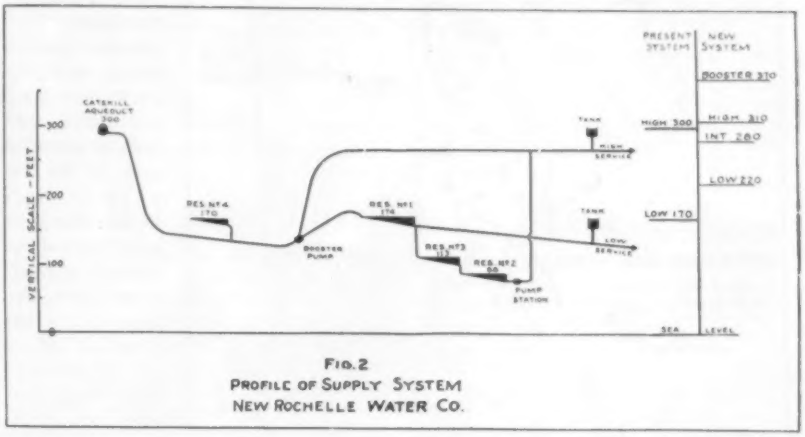


FIG. 2
PROFILE OF SUPPLY SYSTEM
NEW ROCHELLE WATER CO.

The protection of watersheds situated in the midst of towns and villages, as these are, has been an increasingly difficult and expensive task. It has been accomplished only through the ownership or control of large areas and by continuous and thorough patrolling. There is even now under construction a county parkway project which will unquestionably increase the work of sanitary control. These facts, together with the rapidly increasing value of land, have made the eventual abandonment of the original sources inevitable.

Study of Distribution System

The Pitometer Co., of New York City, was engaged to make a comprehensive study of the entire system with a view to laying out the necessary new works for this change-over, so that all portions of the old transmission and distribution system might be used as efficiently as possible and at the same time strengthened at those points where their original capacities had been outgrown. On account of the unusually rapid growth of the plant, it was also necessary to forecast as accurately as possible the location and amount of this growth and to proportion the system accordingly.

For the purpose of this study a most thorough investigation was made of the existing system. In the case of the plant itself, pressure records were obtained at hydrants throughout the system, and at many points tests were made of the available flow, using enough hydrants simultaneously so that by noting residual pressures the total capacity could be determined. All the principal transmission mains were tested to determine their hydraulic coefficients and thereby know the capacity for which they could be relied on.

Future Consumption

In addition to this, all the data available were collected that might indicate the probable future consumption of the system, both domestic and fire requirements. The trend of future growth was studied in order that the needs of each portion of the system might be estimated. A large section of the northern end of New Rochelle and Eastchester is as yet very sparsely built up, and these portions include some of the highest territory. There are within the communities served five golf courses of considerable size. The possibility of these areas being changed into residential developments was considered. The future growth of the business areas was investigated and their needs forecast as nearly as possible.

New Features

Figures 2 and 3 show the principal features in the transmission and distribution system as they originally existed and with the new features which it is

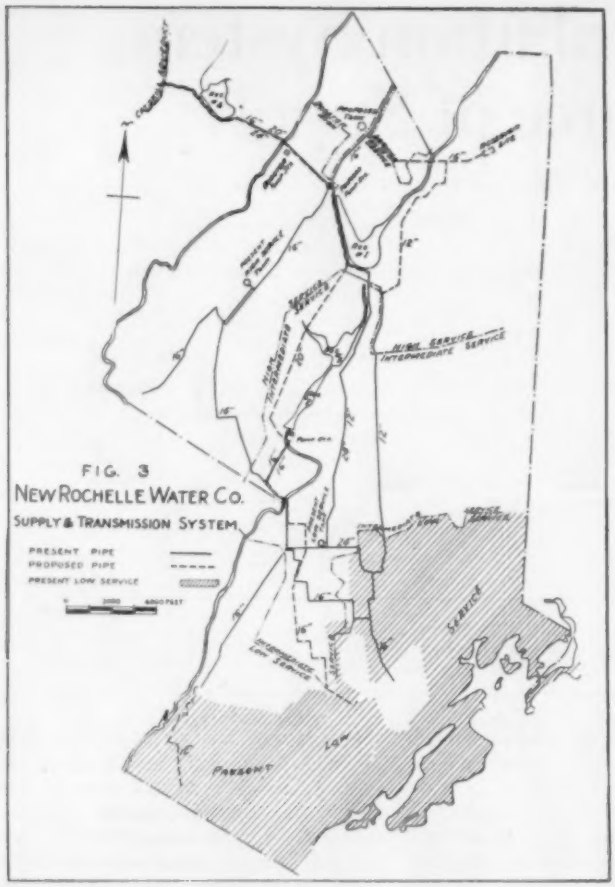


FIG. 3
NEW ROCHELLE WATER CO.
SUPPLY & TRANSMISSION SYSTEM
PRESENT PIPE
PROPOSED PIPE
PRESENT LOW SERVICE

proposed to add. The old system consists of two levels of distribution, the low territory being fed by gravity from the highest reservoir, No. 1, and the high territory being supplied by water pumped from the lowest reservoir, No. 2. This arrangement was best because the highest reservoir is the only one which is high enough to feed any of the system by gravity and since it has but little capacity above that necessary for the gravity system alone. Reservoir No. 4 water is available only through boosting it over the intervening rise into No. 1, and reservoir No. 3 has no outlet except into the stream and thence into No. 2.

The make-up water from the Catskill Aqueduct is put principally into the high service, the same booster pump which handles No. 4 water also serving for this purpose through the manipulation of valves. The storage in the reservoirs makes it possible to remove the pump from one task for a period while performing the other. By putting the most of the Catskill water into the high service, its elevation is not wasted, the pump having only to overcome transmission line friction. Reservoirs No. 1 and 4, used as a unit together, are about able to serve the needs of the gravity service, since they are the two which have the greatest capacity. Should make-up water be required there, however, the piping is so arranged that it can be put into No. 1.

Two levels of distribution are not sufficient to serve the system adequately. The high portions in the territory now being served are not supplied with sufficient pressure, and territory that will be extended into in the future is still higher. The pressure levels of the two present services have also necessitated the isolation of a comparatively small high-pressure area in the business section of New Rochelle. This has caused difficulty in providing ample transmission main capacity, both into this isolated high-service area and also into the low-service area to the immediate south of it, the supply to which is cut off by its presence.

Four Levels of Distribution

For the new system, fed entirely from the Catskill Aqueduct, four levels of distribution are considered necessary. The upper two, known as the "high service" and the "booster service," are pumped. The next lower service, known as the "intermediate service," is fed from the Catskill Aqueduct direct, and the lowest service, known as the "low service," is fed through pressure-reducing valves.

Consider now the feeds from the Catskill Aqueduct southward into the "intermediate service" and through that into the "low service." At present a 16-inch pipe goes from the aqueduct to the lower end of reservoir No. 1. It is paralleled by a 20-inch pipe for the distance between reservoir No. 4 and reservoir No. 1. This 20-inch pipe is to be extended up to the aqueduct and down along the west side of the reservoirs to the foot of reservoir No. 2, where it will feed into the mains now fed by the pumping-station at that point. Feed by this route is also to be strengthened by the duplication of the present 16-inch main from reservoir No. 2 into the principal business section of New Rochelle. These mains are all shown on Figure 3.

The above-mentioned 16-inch main from the aqueduct to the lower end of reservoir No. 1 will also be paralleled for its entire length by a new 24-inch main; together these mains will feed the system through the present 24-inch main which now conducts the water from reservoir No. 1, and also two 12-inch mains which lead southward from this point. One of these 12-inch mains at present conducts high-service water northward into the upper portion of New Rochelle.

The actual connection into the Catskill Aqueduct will not need to be enlarged. It is now 20-inch, enlarging immediately into a 24-inch venturi meter. The three transmission mains will connect right below this meter.

It will be noted that the transmission mains from the aqueduct cross a present 16-inch main just above reservoir No. 1. The water for the new high service will be pumped at this point into this 16-inch main, which with its laterals covers the western section of the proposed high-service area. This main will be extended as shown, up to the proposed new reservoir, and thence, as needed, feeders will extend into the high northern end of New Rochelle, now undeveloped, which will form the eastern section of the high service.

Booster Service

The "booster service" will comprise at present only a comparatively small area of the extremely northern end of the territory which is too high to be fed from a reservoir. It will be supplied from an elevated tank located as shown in Figure 3, and the water will be pumped in the same pump-station before mentioned which supplies the high service. A duplicate main now existing will conduct this water from the pumps to the tank. When the area around the new high-service reservoir develops, it will be necessary to extend this booster service to include those portions too high to be fed from the reservoir.

It is to be noted that in the new plans the present steel tanks will both be abandoned. Unfortunately, neither of them is at such an elevation that it can be used.

Integrity of Service

Under the new method of supply there will necessarily need to be greater dependence placed upon the integrity of comparatively long supply mains for continuity of supply. The safety of this will be assured not only by the presence of several parallel mains, but by the new reservoir. It is planned that this reservoir will be a covered concrete and earth-bank reservoir of at least five million gallons capacity. It must be remembered that the Catskill Aqueduct itself is a source of more than usual dependability, being the principal supply conduit for New York City and nor-

mally carrying from 400 to 600 million gallons per day.

Pumping

The pumping for the new system will all be done in the single station, where there will be a sufficient duplication of equipment to insure dependable operation both into the high and the booster service. As an additional factor of safety in case of emergency, the booster service may be fed from the high service at somewhat reduced pressure. The attendant at the pump-station will have control of the valves necessary for this, as well as those which may be used, if needed, to allow water from the reservoir to pass into the "intermediate service" and thence into the "low service."

Pressure-Reducing Valves

The use of pressure-reducing valves is one of the features of the new system. Through their use some of the disadvantages of employing several levels of distribution are overcome. The carrying of the mains of one pressure through a different pressure area, and the consequent duplication, is avoided. The same transmission mains feed both services, and adequate capacity for each is more easily provided. Also, the reservoir storage is made more readily available to the lower level in case of emergency.

A special study is being made of the method of installing these pressure-reducing valves in order to obviate as far as possible mechanical difficulties with them. They will be installed in carefully constructed concrete vaults, where they will be protected from frost and dirt and where there will be provided facilities such as gage connections, valves, blow-offs, etc., so that they may be regularly inspected and tested.

Weak Points Reinforced

In connection with the re-design of the distribution system for the new source of supply, there was another problem to be met which considerably complicated the task. This was the fact that the present system had in it several portions that were in need of immediate reinforcement. It was necessary to remedy certain conditions even before the whole system could be shifted over to the new source of supply. This required that not only must the old features of the plant be adapted to the new system, but new features must be added to the old plant which later must be adapted to the new system.

One of the items of this reinforcement consists of the new 16-inch main from the pumping-station at the foot of reservoir No. 2 into the business section of New Rochelle. The part which this new main takes in the new system has already been mentioned.

Another item of immediate reinforcement consists in the increasing of the pressure in a high section of the old low-service area in Pelham Manor in the southwest corner of the territory. This is done by the installation of a pressure-reducing valve in a temporary location, where it will feed from the old high-service into a new 12-inch feeder, shown on Figure 3. This feeder will later form a valuable line into this portion of the territory, since it will then be fed by a present 16-inch low-service main.

In order to further strengthen the present system, the pressure-reducing valves which will eventually be used to feed from the direct into the low service are all to be installed immediately in temporary locations between the present high and low services. In these temporary installations they will be set so that under all normal conditions they will remain closed. Under conditions of excessive drop in pressure on the low-service side, as in case of a fire draft, they will, however, open up and make the high-service feed available into the low service. This will strengthen that section of the present low service, previously mentioned, which is somewhat isolated by the high-service business section of New Rochelle.

Considerable reinforcement is necessary and is being provided among the smaller portions of the distribution grid.

ACKNOWLEDGMENT.—From a paper read before the New York Section, American Water Works Association.

Sanitary Districts in Missouri

IN recent years the suburban sections lying outside the limits of the larger cities in the state of Missouri, have experienced considerable difficulty in disposing of their domestic wastes, inasmuch as there has been no law on the state statute books whereby an organization could be perfected and the proper steps taken toward the construction of sanitary sewer systems.

Some years back, legislation was initiated and, after some discussion, was passed, eliminating this difficulty, whereupon proceedings were immediately started in St. Louis County toward the construction of such a system. Some of the property owners, complained, however, and a suit was carried to the State Supreme Court, where the law was declared unconstitutional, thus leaving some of the property in a worse condition than heretofore.

This year Richard F. Ralph, representative from St. Louis County, in collaboration with N. R. Holcomb, one of the Jackson County representatives, reframed the law, removing therefrom the feature that had previously proved objectionable, and the bill became a law in March, 1927. As now drawn, it provides for the construction of sewers in the suburban districts of any county having a population of over 75,000 people.

The procedure to be followed for the organization of the district is very simple. A petition signed by 100 property owners is first prepared and submitted to the Circuit Court, whereupon a hearing is held as to the advisability of the sewer discussed. Should the Circuit Judge decide that the best interests of the district would be served by the construction of the sewer, he appoints three supervisors, who organize and appoint a secretary, an attorney and an engineer, and levy a tax of not to exceed 10 cents on every 100 square feet of area, for the costs of preliminary work.

Proceedings have already been commenced looking toward the construction of a system to serve the communities of Maywood, Mt. Washington, Englewood, and Fairmount in Jackson County, in which Kansas City is located. The district will comprise about 5,000 acres and embraces a population of 10,000 or 12,000 people. This district has never had sewers.

To date, the supervisors have been appointed and have organized, selecting their secretary and counsel and appointing E. T. Archer, of E. T. Archer & Co., Kansas City, Mo., and C. A. Haskins as their engineers.

AN UNUSUAL SCENE IN PENETRATION MACADAM CONSTRUCTION

Three Seeony asphalt distributors covering a 27-foot roadway in one operation in Swampscott, Mass.

Street Maintenance and Repairs in South Bend, Ind.

By IRVING M. GOSS
DEPUTY STREET COMMISSIONER OF SOUTH BEND, INDIANA

SOUTH BEND, Ind., is an active industrial city, with a population of 110,000. The large number of factories in the city, and its location on the Lincoln and Dixie Highways as well as other heavy traffic roads, produce a heavy truck traffic. There are nearly 200 miles of paved streets, about 70 per cent of which are asphalt, mostly sheet asphalt surface. About 20 miles of these asphalt streets are from 20 to 33 years old, and, of course, this paving was done at a time when horse-drawn traffic was the only thing they had to take care of.

To carry out the maintenance work successfully, sufficient funds must be provided. In South Bend the budget allowance for 1928 for the Street Repair Department is $19,580 as against $16,902 for 1927. About $30,000 is received from the state gasoline tax, making a total in round figures of approximately $50,000. This has been sufficient for the Street Department to carry on its work. It must be remembered, however, that motor-vehicle owners are becoming more critical and exacting each year and desire just returns for taxes paid. It is very essential that the work should be planned and executed by a competent organization, supplied with up-to-date equipment.

For patching in maintenance work emulsified asphalt, Kentucky Rock, Amiesite, and sheet asphalt are used in South Bend as well as the old asphalt which the contractors remove from the streets. All the old material is hauled to the city yards, where it is reheated and then relaid so that it is not easy to tell it from new asphalt by its appearance, and no difference has been found in its wearing qualities. A brick of new asphalt construction and also a brick of the old asphalt reheated were recently sent to the chemists of a large local manufacturing concern and the chemists reported that there was no difference to be seen between the two.

The new asphalt costs from $10 to $14 per ton, and when the repairing is done with the old asphalt, to which a small amount of new material is added a great saving is effected. The contractors who have to remove the asphalt from the streets are usually glad to haul it to the city yards, because it relieves them of the job of hunting for a place in which to dump it.

The old streets built from 20 to 30 years ago consist of 5 inches of concrete, 1 inch of base, and about ¾-inch of asphalt, making a pavement less than 7 inches thick. The new pavements have from 6 to 7 inches of concrete, 1½ inches of binder, and 1½ inches of top.

TWIN HEATING KETTLES USED FOR BOTH NEW AND OLD MATERIALS FOR ASPHALT PATCHING IN SOUTH BEND, IND.

Repairing Service Cuts

The new pavements, which are 9 to 10 inches thick, do not require much maintenance, but, of course, they have to be repaired when they are cut by plumbers and other contractors. The asphalt from these cuts is put in the twin kettles illustrated. This plant is an inexpensive outfit compared with most of the reheating plants on the market, but it works very satisfactorily, and with it 6 or 7 tons of excellent patching material are produced each day. It also can be used with the new material, whereas most of the asphalt-heating plants on the market are not adapted to the use of the old asphalt.

Cost of Operation

Two men are used at the kettles to break up the chunks so that none over 6 inches square are put in for heating. They also keep the material mixed and see that it does not burn. There are five laborers cutting and cleaning out the places to be patched and laying the asphalt mixed in this way. The truck driver and foreman complete the outfit, and the cost per day is as follows:

7 men and 1 foreman	$58.00
Use of truck	11.25
300 lbs. of coal	1.25
14 lbs. 60 penetration asphalt	.50
500 lbs. of new mixed asphalt	3.25
100 gallons kerosene for heating kettles	11.00
Total cost	$85.25

A day's work will usually mean laying 80 to 85 yards 1½ inches thick, using 6 to 7 tons of material for the work. Of course, if all new material were used, $70 to $80 would be added, which represents what we save by heating the old material with our home made equipment.

ACKNOWLEDGMENT.—Abstract of a paper presented before the Sixth Annual Asphalt Paving Conference at Atlanta, Ga.

The Brookings Institution—A New Research Center

THIS new foundation, named in honor of Robert Somers Brookings, founder of the separate institutions which form its nucleus, has been established in Washington, D. C., with an endowment of several million dollars, to cover eventually the whole range of the social sciences, including economics, government administration, political relations, history, law and social organization. It amalgamates the Institute of Economics, the Institute for Government Research and the Robert Brookings Graduate School of Economics and Government. Dr. Harold G. Moulton, Director of the Institute of Economics and Chairman of the Problems and Policy Committee of the Social Science Research Council, is the President of the Institution, and its trustees are leaders in educational, financial, industrial and public life.

Salvaging Broken Stone and Gravel Roads in the Southwest

By WILLIAM H. RHODES

ASPHALT surfacing lends itself to many methods of construction. It can be adapted to meet any amount of traffic or type of traffic. The various steps in bettering a gravel or broken stone road are: first, surface treatment with cold asphaltic road oil or with hot asphaltic road oil; second, asphaltic macadam or penetration macadam; third, asphaltic concrete; fourth, sheet asphalt.

Surface Treatment

The purpose of a surface treatment with cold liquid asphalt is to lay the dust and secure penetration of the gravel, the treatment acting as a binder course for the later treatment of hot oil. The principal advantages of this method are that the oil does not require a heating plant or car nor a pressure distributor to spread it on the road. The disadvantages are that it does not form a mat or smooth surface and is of only temporary value if neglected. The oil coats each pebble with a film of asphalt and penetrates the surfacing to a depth of from 1 to 2 inches. In Oklahoma, it was found that this treatment materially aided the gravel surface; it laid the dust and made an ideal first treatment. An oil containing about 60 per cent asphalt was used and was spread at a rate of 0.5-gallon per square yard.

The procedure was, first, to patch any depressions in the existing gravel surfacing, using, if possible, as patching material the same kind of material as that with which the road was originally built. Then the surface was thoroughly graded and shaped to the desired cross-section, using a heavy road machine. Traffic was allowed to use the road for several days to thoroughly compact the patching. Then the gravel was reshaped and the oil spread. Traffic was kept off for 24 hours. After a few months of wear this treatment should be followed by a hot application. Best results will be had from the cold oil treatment of sand gravel where the oil will penetrate. On closely bound clay-gravel, cold oil treatments are not recommended.

Treatment with hot road oil is the so-called carpet treatment, which is very generally followed both in towns and on county highways where it is desired to lay the dust, make a smoother waterproof surface and conserve the gravel. If special care is taken, this treatment gives very good results, and the cost is not excessive. It should be understood, however, that in no sense should this treatment be classified as a pavement. Wherever weak places develop in the gravel subgrade, depressions will appear in the surface, requiring prompt maintenance.

Before attempting any treatment it is well to thoroughly test the rock or gravel street as to thickness. It is a waste of time and money to attempt to treat a thoroughly worn-out surfacing. The success of oiling depends on a substantial base firm enough to hold up under traffic, provided the covering is waterproof. A gravel street when saturated with water is in its least stable condition, but if it can be kept dry by waterproofing, a somewhat less thickness of compacted gravel can be used than would be needed to hold traffic without such treatment. Should the tests show that the gravel street is thin, it is possible to bring it up to the desired thickness with additional gravel and permit the surface to consolidate under traffic. The asphaltic oil now used most generally is from 175 to 250 penetration, although many states still demand the old 80 per cent road oil. These oils require heating to be withdrawn from the tank cars and require pressure distributors for spreading. The oil works best when heated to about 275 degrees Fahrenheit.

Gravel Roads Blow Away

From experience gained in maintaining the highways in Louisiana and Oklahoma, I know that a road carrying 600 vehicles per 24 hours will in 5 years wear down a gravel road laid 8 inches thick to a veneer of less than 3 inches. The 8 inches of gravel laid loose will compact under traffic to about 6 inches. It is a very conservative estimate to say that the gravel surface will wear away at least ¾-inch per year. In small towns and cities it is very seldom the case that the gravel does not wear away twice as rapidly as on the highway, because of much heavier traffic and the very disastrous effects of sprinkling with water to lay dust. Assuming that 1½ inches of gravel wears away in a year, the town suffers a loss of one-quarter of its surfacing annually.

In the Southwest, 6 inches of compacted gravel costs in place 50 to 75 cents per square yard, so it is evident that a town in that section is losing in gravel the value of from 13 to 18 cents per square yard per year.

After the street has been carefully patched, brought to true subgrade cross-section and compacted by traffic, it is ready for the application of oil. The street should be closed to traffic. First, with a rotary broom, the dust, dirt or loose gravel should be swept to the gutters or ditches. In case of a macadam road, the crust of dirt or dust should be broken off and the surface swept clean. After sweeping, the pebbles or rock should be left protruding somewhat so as to give a better hold to the oil. Then the asphaltic oil is spread with the distributor at the rate of about 0.5-gallon per square yard. On this is cast the cover material, which is usually washed clean pea gravel or clean rock chips, none of which are over ¾-inch. A fair estimate of cover material is that 1 cubic yard will cover about 70 square yards, or about 40 pounds of rock will be needed to the square yard of treatment. The spreading of the road is usually done from piles previously spread along the street on the side. The piles are closely placed so that the shovelers can easily cast. Several contractors state that they have used mechanical spreaders with success. This method of treatment is probably the simplest and cheapest of all surface treatments. The results will depend largely on the uniformity of spread by the distributor operators. Should it be necessary to stop to clean the nozzles of the machine or for other causes, the oil should be cut off promptly. Otherwise there will be a flat place or bump where the asphalt drips and puddles.

Sometimes, where additional thickness of surface is necessary, a second coat can be applied, following exactly the same procedure as outlined above. This is not usually to be recommended, however, as such a mat under traffic may become uneven and break. The great tendency in this work is to get the mixture too "fat," that is, with the asphalt content too great through not adding enough covering material. The oil should be thoroughly covered, and as the black begins to show through the loose material on top, more cover material should be added until all the oil has been taken up.

Inverted Penetration

Another manner of preserving gravel surfaces is the so-called inverted penetration method. This has been used extensively in Texas. The method is some-

what the same as the surface treatment, except that the covered material is much larger rock or pebbles, and more asphalt is used, probably about 0.75-gallon per square yard. The first course is thoroughly rolled after the rock has been added, and a second application of asphalt is made of about 0.25-gallon per square yard. Fine material is then used to seal the surface voids. This inverted pentration method is an adaptation of the asphalt macadam or penetration method.

There are many other methods followed by various engineers and state highway departments with slight changes in the several operations. With the single hot oil treatment the asphaltic mixture will be about ½-inch thick. With the cold oil treatment followed by the hot oil treatment, a mixture of at least 1 inch and possibly up to 2 inches will be secured.

Asphalt Penetration Macadam

With the exception of Louisiana and Mississippi, most states in the Southwest have an abundance of rock suitable for street construction, and consequently there are many towns where waterbound macadam streets have been built and have been in service for many years. With the heavy wear of modern traffic, the macadam surface has become so worn out and raveled that some steps should be taken either to secure a new pavement or to so treat the existing macadam as to provide a new surface. should be taken either to secure a new asphaltic wearing surface is by the penetration method. This method is to be recommended where suitable rock is inexpensive and where the old macadam street can be used as a base. Where funds for the improvement will permit, asphaltic concrete should be recommended in preference to penetration macadam, as the superiority of hot mix pavement over penetration macadam is marked.

The thickness of the old macadam must be enough to act as a base for the new pavement. Many engineers reason that if the road before improvement is strong enough to carry traffic, it surely will be ample when a surfacing is added. There is a great deal of truth in this, but it must be remembered that a new street always attracts more traffic and heavier-loaded vehicles. That is a problem each city or county engineer must solve for himself from his own experience in the community concerned. It is not possible to say what should be the minimum thickness. That depends on subsoil conditions and the type of traffic. Under any condition it should not be less than 5 inches. Where the base is not thick enough, additional rock may be used. This can be done by lightly scarifying the old surface and adding the necessary rock before thoroughly rolling.

In many cities the center elevation of the street is too high to permit adding to the pavement without cutting. Most of our streets have been macadamized or graveled by piling up the material in the middle of the street. Usually this has given a very high crown and the top of the roadway is excessively rounded. Where this is the case and the thickness of the material in the center permits, the center should be scarified and the excess used in building up either the quarter points or the sides. Of course, if the curb and gutter is already in, as is usually the case, it may be necessary either to tear the curb and gutter out to establish a new grade or else to remove and lower the old macadam. Where the latter course is necessary, the value of saving the old macadam as a base remains, as it would still be as necessary to remove the rock and excavate should any other pavement be laid. The cost or value of the rock would be saved.

Loose Gravel Wears Tires

A tri-state bus company operating in the Southwest wrote a County Engineer not long ago that the cost of tires on their heavy busses running over a loose gravel road between Shreveport and Monroe, La., was 2 cents a mile more than the cost on tires on the busses running over the asphalt road between Shreveport and Greenwood. A conservative saving in the wear on the tires on an average car would be at least 0.6-cent per mile. Most small-town streets other than residential carry at least 1,000 cars per day. Should the gravel road be treated or surfaced, the daily saving would be $6 per day, or $2,190 per year, per mile. Of course, these savings are to the individual and are therefore not so evident to the community as the other advantages.

In cities a curb or header has been found necessary. This is due to the nature of the traffic, which is constantly turning off the pavement or mounting up on the pavement from the gutters or ditches. Usually this header or gutter is of concrete. On the contrary, on country roads and parkways, concrete curbs or headers are not necessary. There the traffic follows more along the line of the pavement. The only advantage of the concrete header is to help brace the edges of the pavement to withstand the weight of traffic. Traffic on country roads divides. Each vehicle stays on its own side and as a consequence the wheels pass over the same narrow lane of pavement. Such concentration of loading on the edge naturally has a tendency to rut and also to shove out. To overcome this weakness, modern practice has adopted the thickened edge for asphalt surfacing on gravel or macadam bases where such thickened edge is practicable.

The greatest objection to concrete headers is their great cost. Rarely can they be built for less than $5,000 per mile. At 4 per cent interest this sum would give $200 per mile, which would patch a lot of pavement. Where wooden form boards are used for the edge of the pavement, they may be left in place and will serve for several years, long enough to permit the thorough compaction of the shoulder, and meanwhile giving additional support to the pavement.

Asphaltic Concrete

The use of asphaltic concrete in reclaiming macadam roads is very general, and where funds will permit, this method should be followed. The advantages of hot mix over penetration are many. In asphaltic concrete with its properly graded aggregates, a dense mixture is secured and a uniformly mixed pavement is possible from a hot mix asphalt plant.

The procedure followed in shaping the old gravel base for the application of the bituminous concrete is similar to that described for macadam base. The thickness of the base, however, probably should be more than 5 inches where traffic might be heavy.

In case the old gravel road is not thick enough to be used as a base, the laying of a binder course or black base is now very generally adopted. For strength, it is more or less a general practice to consider 1 inch of black base the equivalent, or better, of 2 inches of compacted gravel. Asphalt concrete surfacing is generally laid 2 inches thick.

Sheet Asphalt

The procedure followed in reclaiming old gravel or macadam pavement when sheet asphalt is used as a surfacing course, is similar to that outlined above for penetration macadam and asphaltic concrete, especially so with reference to the shaping of the old road, patching and preparation of the base, and making ready for the surfacing course.

Sheet asphalt is usually laid with a binder course, although this may be dispensed with if the foundation is a black base. Several of the southeastern states are now reclaiming their worn-out gravel roads by topping the old road with a 3-inch binder course on which is spread a sheet asphalt wearing surfacing 1½ inches thick.

Inexperienced officials are warned against using a closed binder. A more or less open binder must be used, especially where gravel is used as coarse aggregate. The percentage of sand should be cut to a point where the surface texture of the compacted binder is distinctly rough, otherwise slippage of the wearing course or binder may result under traffic.

ACKNOWLEDGMENT.—From a paper read before the Annual Convention of the American Society for Municipal Improvements, at Dallas, Texas.

Eliminating Tastes and Odors Caused by Algae in Water

By CHESTER COHEN

SANITARY ENGINEER, TEXAS STATE HEALTH DEPARTMENT

ALGAE are forms of plant life which need warm temperatures and suitable food and sunlight for their development. They usually contaminate uncovered reservoirs only. The algae spores may be transported by means of air or other forces in much the same way as bacteria. On account of their wide prevalence and natural aptitude for developing in nearly all waters, especial care must be exercised in their control in the southern states where temperature and sunlight conditions are particularly favorable.

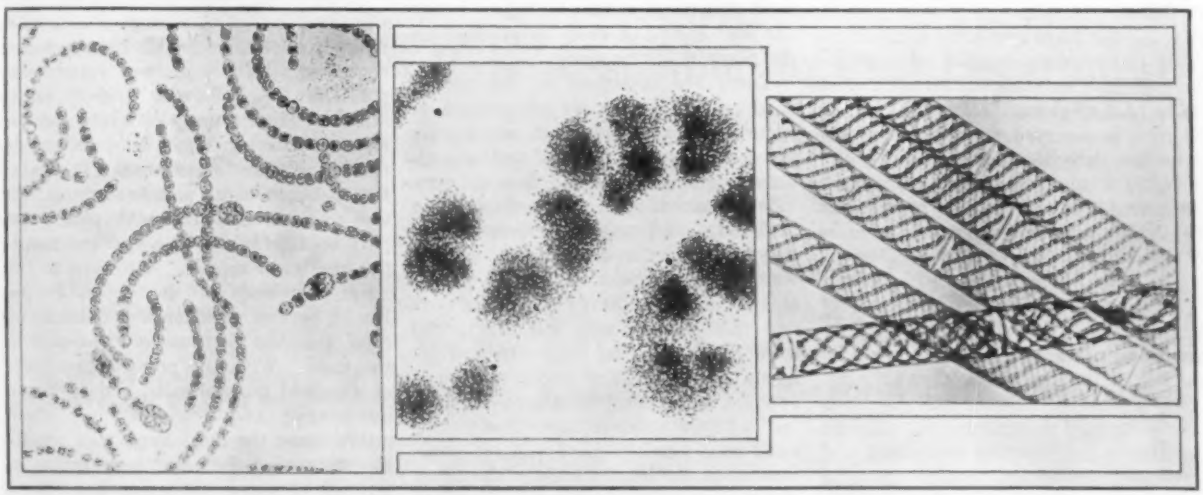
Algae growths are partly responsible for discoloring the water in which they develop, for imparting tastes and odors to the water, for clogging filter beds used in water and sewage treatment, and for filling the pores of the filter material, thereby interfering with sand filtration. Their presence in large quantities may also cause trouble in industrial enterprises or may render the water unfit for swimming pools.

Living algae impart distinctive tastes and odors to water because of the essential oils which they produce. The odors are sometimes described as fishy, grassy, oily, etc. When the algae growth becomes so heavy as to exhaust the food supply present in the water, they may also become a source of odors of decomposition as they begin to die.

In addition to the tastes and odors due directly to algae growth, there is another important group of reactions resulting from the combination of organic matter with the chemicals added in the process of water treatment. This includes a great many medicinal tastes, like iodoform. These usually result when insufficient chlorine is applied to a water containing much organic matter. Here, of course, the remedy would be superchlorination followed by some method of dechlorination, or allowing sufficient time for the chlorine to evaporate from the treated water. Such tastes are especially noticeable where the water has been allowed to become stagnant and is then chlorinated.

Some operators attempt to treat algae-infested water by placing a bag of copper sulphate in the mixing basin. This procedure serves only to kill off the algae which have already developed in previous units. To this dead algae or dead organic content is added the chlorine treatment in amounts sufficient only for sterilization. Needless to say, the result is a water containing a strong medicated taste. The most economical and satisfactory procedure would be to prevent the growth in the first place rather than allow them to develop and then to kill them. In this way the problem of objectionable taste due to the dead algae and chlorine compounds would be avoided.

Some special low forms of algae are able to develop in the absence of sunlight and they therefore develop in the iron and alum solution feed line to the coagulation basin. Thus, these distribution pipes may become clogged and the chemicals prevented from reaching the coagulation basin. Still other forms are able to grow in closed pipes and often seriously interfere with the distribution of water through the mains. The presence of algae growths in a water may also provide a favorable medium for bacterial growths that are objectionable.



TROUBLESOME MICROSCOPIC ORGANISMS FOUND IN WATER-SUPPLIES

At left, Anabaena, which produces an odor ranging from grassy or moldy to a distinct pigpen odor; center, Clathrocystis, which produces a sweet and grassy odor; at right, Spirogyra, which produces trouble other than from a characteristic odor

There are two methods by which odors may be eliminated. One is to destroy the odor and the other is to destroy the algae which cause the odor. It is usually more practical to control the algae growth than to attempt to eliminate the odors.

Algae Control

There are two well-known methods of controlling algae, the choice of which depends upon whether the storage basin is large or small. Small basins and tanks can be easily covered to prevent the sunlight from reaching the water, thereby checking the growth of the organisms. With large impounding reservoirs

it is impracticable to attempt covering and a chemical must be added to the water to eliminate the plant growth. Among the more or less theoretical considerations for algae control there might be mentioned the elimination of the chemical compounds which serve as algae food and the application of coagulants which would drag the algae down to the bottom of the reservoir, where the sediment could be flushed out without interfering with the continuous operation of the system; or, again, the growths could be controlled by adjusting the hydrogen ion concentration.

The usual algicide employed is copper sulphate or bluestone, although rigid experiments have pointed to a more general use of chlorine as an effective algicide. The amount of the dosage with either chemical depends upon: (1) the individual organism to be destroyed; (2) the amount of suspended or dissolved organic matter in the water; (3) the physical characteristics of the water as regards turbidity, color and temperature; (4) the retention period to be allowed after treatment, or the allowable period of time for maintaining the unit out of service.

Satisfactory algae control consists in keeping the plant growth at a minimum. This necessitates regular microscopic analyses and counting the forms in order to be able to check the growth when an increase is observed. Analysis also permits the detection of especially objectionable forms that require immediate treatment. Samples taken at different depths in the reservoir indicate the zones of growth and enable the operator to compute the volume of water in the zone of growth. It is necessary to treat only that volume of water in which the algae are growing, and in this way economy in the use of the algicide is effected.

In the use of chlorine the dosage is figured by first determining the chlorine demand of the water to be treated and then applying enough chlorine to give the residual quantity required for the particular organisms. In the copper sulphate method we have the total quantity of salt necessary, whereas with chlorine the dosage is based upon the residual value rather than on the total chlorine to be applied. This is because chlorine has a greater affinity for organic matter in the water than has copper sulphate and is more readily oxidized.

Applying Copper Sulphate

Copper sulphate may be applied either as a powder or in solution. Application of a solution feed could be effected by dissolving the copper sulphate in a tank placed on a boat and then spraying the solution over the surface of the water, distributing it at different depths by means of a hose connection. In the powdered form it may be applied by dragging sacks of the salts through the water over such a course and at such a rate as to permit an even distribution, dissolving the salts through the entire body of the reservoir being treated. The problem of evenly dosing with copper sulphate is the most difficult point connected with reservoir control and is likewise the most important. Fish life is killed by too high concentration of copper sulphate; in fact, some trout are affected by concentrations as low as 1.2 pounds per million gallons. On the other hand, if certain portions of the water receive under-dosages the algae are not affected. Not only has the application of the chemical been wasted, but the various under-dosed areas of the reservoir will serve as seeding places to recontaminate the rest.

Destroying Water Weeds

The growth of chara and other types of water weeds cannot be destroyed by ordinary dosages of copper sulphate or chlorine. The only successful method of dealing with these larger organisms is to cut them below the water line or drag the bottom of the reservoir in such a way as to pull out and remove the submerged vegetation, both plant and root. Such procedure should be begun before the seed is ripe in order to prevent the distribution of the seed.

There are objections to the use of chemical agents for the elimination of algae growths, all of which are worthy of consideration. Chemical treatment is a temporary measure and does not provide permanent relief; under-dosages are ineffectual and wasteful; over-dosages may result in a discoloration of the water or may render the supply unsuitable for use temporarily because of excess chemicals or may kill fish in the stream receiving the copper-treated effluent. The weight of public opinion is opposed to chemical treatment or "doping" a public water-supply. The copper salts may possibly have poisonous effects upon the human body. The effect of copper salts on the human being and the rate of precipitation and elimination of the copper salts from the water are still disputed. The combination of chlorine with organic matter may produce objectionable tastes.

Chlorine as an algicide possesses certain advantages over copper sulphate. It is more easily applied either in solution or in gaseous form. It will be dissipated into the air after a short time and cannot therefore be accused of affecting the health of the person drinking the water. It is especially applicable in small reservoirs already being treated with chlorine as a bactericide, because only a small increase in the dosage is necessary to make it serve as an algicide. In small basins where the retention period is short, it is not necessary that the dosed unit be thrown out of service, whereas the copper sulphate treatment does require that the unit remain out of service in order to prevent the copper salts from entering the mains. The chlorine solution may serve as an algicide without raising the maintenance cost of the units. Where chlorine is used as an algicide, attention should be called to the possibility of double chlorination. A distinct taste of chlorine in the water is objectionable to the consumer.

Algae Not Harmful to Health

It is generally conceded that aside from the physiological effect algae do not directly concern the health of the water consumer. If they make a supply unpalatable or otherwise objectionable, however, other sources of water may be resorted to which might be questionable from a sanitary standpoint. The relation between algae and bacteria is not well understood, but it may play some part in determining the sanitary qualities of a water-supply. According to the latest standards of the U. S. Public Health Service, drinking-water should be clear, colorless, odorless and pleasant to the taste. With the possible exception of dissolved mineral salts, and pollution by sewage and trade wastes, algae growths are the most important agents in determining the physiological characteristics of water. It is for this reason that a close study of control methods is most desirable.

ACKNOWLEDGMENT.—From a paper presented at the Fifth Short School for Sanitarians, sponsored by the Texas State Department of Health.

Saving Money for the City on Coal

A survey of the municipalities of the state by the New York State Bureau of Municipal Information shows that various methods are used for purchasing coal for the use of municipal departments and that few have in operation an effective system. Some municipalities buy in ton lots, others by contract from local dealers. A few purchase wholesale in carload lots or by competitive bidding based on an analysis as well as price. Only a few purchase on specification whereby they pay for heat instead of coal. By having proper specifications and buying at wholesale in as large a quantity as possible, some municipalities have effected considerable saving.

Lower Rates for Domestic Use of Electricity

RATE schedules of electric service companies in the United States have for many years shown great discrepancies between the rates charged domestic consumers and those charged large power users. In most cases the former class of customers pays from five to ten times the amount per kilowatt-hour of electrical energy that the latter class pays. Some substantial ratio is justified on a cost basis, but the lack of merit in the present practice is forcefully shown in a noteworthy presentation of the subject, in an open letter to the electrical industry, by Morris Llewellyn Cooke, of Philadelphia, consulting engineer, and director of the Giant Power Survey conducted in Pennsylvania two years ago under the administration of Governor Pinchot. The document was released to the press in the form of a printed pamphlet of 49 pages. It draws from the wide experience of the author and from many other sources and is laden with analytical and statistical evidence. A specific conclusion is that a ratio of three to one for domestic, as compared with large power rates, in cases where the lower rate is one cent or more, may be considered an outside figure. Mr. Cooke maintains not merely that the companies in general can afford the reduction, but that it is also to their best interests. Excerpts of particular significance follow:

"In the absence of any more rational method of determining electric rates, the tendency has been for the electric utilities to charge the large users competitive prices and the small consumers monopolistic prices. As the large consumer cannot be made to pay much more than the actual cost of production, most of the very large profits in the electrical industry have consequently been taken from the small consumers—not through rendering them a growing service but through charging them high unit prices. On the other hand, there appears to be no effective way by which the small consumer can get his case adequately presented to the public service commissions and considered by them. Such presentation can only be made at great expense, and no public agency is constituted and equipped to render this distinctly public service."

"In fixing electric rates with due allowance for the greater cost of service to the domestic consumer, it must be remembered that with every lowering of rates domestic consumers are demonstrated to be using much more electricity. Facts regarding the extent of such increase are to follow. Here it is simply to be reiterated that since, for the reasons just outlined, the more current used the less the service cost per kilowatt-hour, it follows that the establishment of low or even moderate domestic rates is certain to result in materially lowered distribution costs per unit. It further follows that it is not only a civic duty but to the interest of the electric companies to seek ways by which rates calculated to stimulate usage may become established in the domestic schedule."

"All the indications are that, where the average domestic consumption is reasonably strong—as it is sure to be where rates are not exorbitant—and the current consumed is steam-generated, it cannot cost even three times as much to supply the average domestic consumer as it does to supply the average wholesale power user."

"Although the lowering of residential electric rates represents a distinct financial gain to the consumer, it need not represent a corresponding financial loss to the electric company. Within limits, it may represent no loss at all. This is because, as rates are lowered, domestic consumption increases. Though it costs some more to produce the additional current needed, it costs very little more to distribute the greater quantity. The unit cost of serving the domestic consumer is thus very materially reduced."

"It is not generally realized how important, from the standpoint of public welfare, the lowering of domestic electric rates really is. It is not so much that the lowering of electric rates would save the consumer money. The main gain would rise out of the increased use of electric current. The consumer may spend more for electricity at low rates than at high ones; but he will have gained the very material advantages which can be derived from an abundant use of low-priced light, power, and heat."

"Home life and especially life on the farm are after all fundamental to the well-being of the American state. Electricity can play a master-role in their upbuilding. Therefore the question as to whether or not the electrical industry should inaugurate rate schedules designed to bring about the largest possible domestic use of electricity becomes one of national policy. In this matter happily the interest of the nation, of the consumer and of the security holders of the electrical industry are the same. We appear to be on the eve of a period of radical reduction in the charges for domestic current."

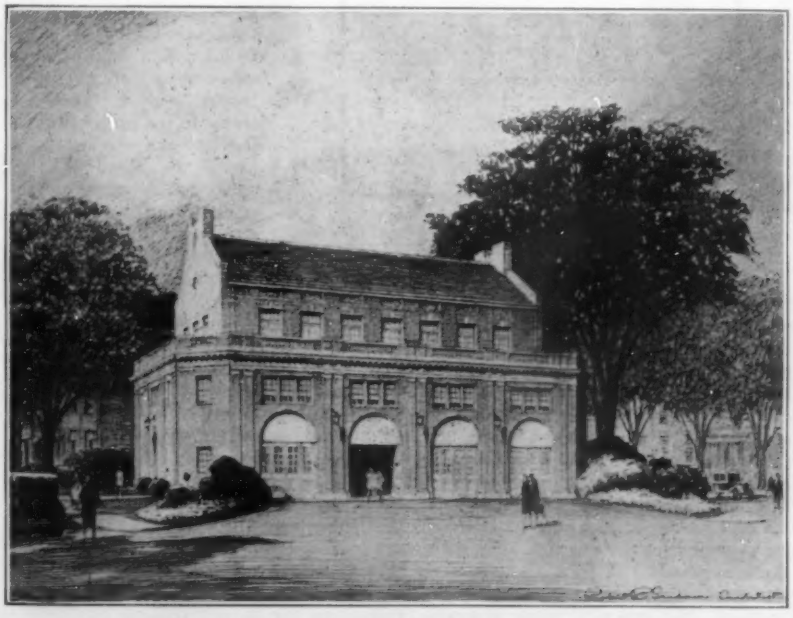
Fire Station for Volunteers Designed for Easy Adaptation to Paid Department

A NEW central fire station for Middletown, N. Y., has been authorized and planned after investigation of many modern structures for similar use in surrounding territory.

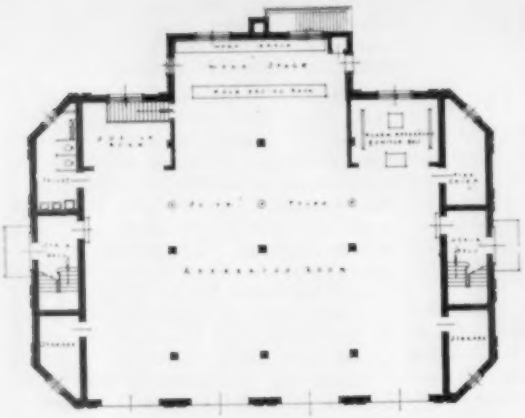
The building is planned to house four volunteer fire companies, but has been laid out by the architect, Robert R. Graham of Middletown, in such a manner as to be easily adapted to the needs of a paid fire department if at any future date the city should desire to change from a volunteer to a paid department.

In general the building is of fire-proof construction, bearing walls throughout being of brick, with fireproof floor systems.

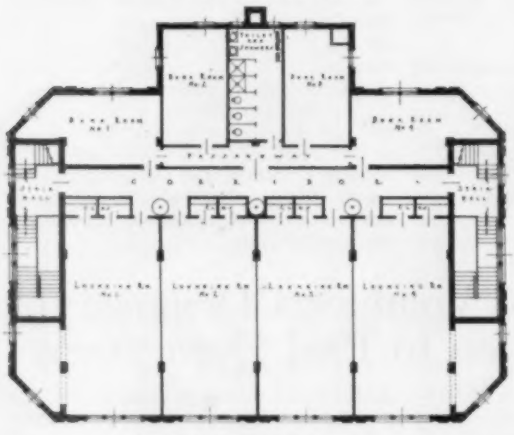
The exterior is designed in the Georgian style of architecture, and is faced with Harvard brick trimmed with limestone, with granite base courses and entrance steps. The basement provides space for the heating and ventilating apparatus and



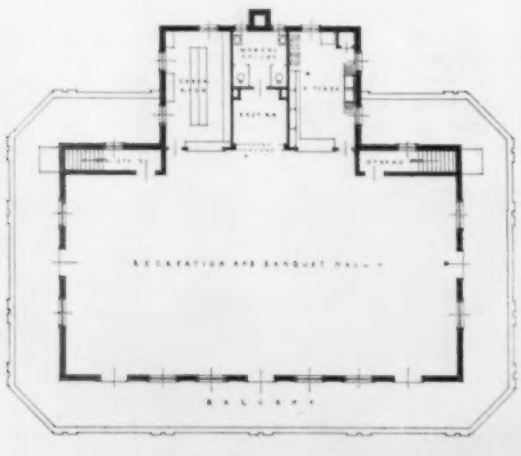
ARCHITECT'S SKETCH OF NEW FIRE STATION, MIDDLETOWN, N. Y.



First Floor Plan



Second Floor Plan



Third Floor Plan

for fuel. The heating plant is a thoroughly modern low-pressure vacuum heating system. A battery room is located directly below the fire-alarm apparatus room on the first floor. In addition to these rooms, four large storage rooms, one for each company, are located off the main corridor.

The first floor is given over largely to space for the fire trucks, one large room being provided for the purpose, with walls of light buff brick. A floor drainage system is arranged to make washing of apparatus easy. Hot and cold water is available in several locations for washing. At the rear of the apparatus room are the supply room and alarm apparatus room. Between these is a work bench for repair work and the hose-drying rack. At the left is a large toilet and, at the other side, directly adjacent to the alarm apparatus room, is the fire chief's office. Two other storage rooms and stair halls occupy the remainder of the space in the first floor.

A large stairway on both sides of the building leads to the main corridor on the second floor. The space at the front of the building is divided into four lounging rooms for the companies. These are separated with folding doors and arranged so that they can be opened up to provide larger space for the companies for special occasions. At the rear of the building are four large separate bunk rooms with a spacious shower and toilet between. Toilets throughout will have tile floors, marble wainscoating and marble toilet stalls. The bunk rooms have separate entrances to the shower room without entering the main corridor. A mechanical ventilating system will ventilate the lounging rooms and bunk rooms.

The entire top floor is given over to one large drill hall and banquet room with check room, ladies' rest room and toilet adjacent, and a thoroughly equipped and modern kitchen with dumbwaiter service to the first floor. The building has a setback at the third floor level, and space thus provided forms a balcony opening directly from this floor and extending completely around the building.

All trim throughout the building is of metal. The main corridors and stair halls have terrazzo floors. The lounging rooms have maple floors, plaster walls and cornices. The banquet hall has a high ceiling opening through to the roof.

The Interrelation of Water Purification and Sewage Treatment

IN a paper presented before the Sixth Annual Ohio Conference on Water Purification, the problems arising from the disposal of municipal sewage in the same body of water from which the water-supply is obtained, are discussed. Special reference is made to the situation at Cleveland, Ohio. The sewage of that city has steadily increased in volume, and the water-supply intake has been moved from an original location 400 feet from shore to points 4½ miles out. Water from these new intakes is badly polluted and figures show an increase of pollution proportional to the increase in the population of the city. A marked fluctuation is noted in the quality of the water at the intakes, due to currents set up by tides and wind and ice movement.

Typhoid death-rates per 100,000 population have decreased from 43 during the period 1890 to 1900 to 8.7 during the period 1910 to 1920. This improvement is accounted for by the fact that disinfection of the public water-supply was begun in 1911, followed by filtration of 50 per cent of the supply in 1918.

The question is raised as to how grossly the water-supply can be polluted before the barriers of filtration and disinfection are broken down. During 1925 the yearly average of B. coli was over 900 per 100 c.c. and there were ten days during the year when the B. coli content amounted to from 10,000 to 100,000 per 100 c.c. The B. coli of the filtered water averages 123 per 100 c.c. To a very considerable degree reliance for a safe water is being placed on disinfection.

The conclusion drawn is that Cleveland and other cities similarly situated with respect to water-supply and sewage disposal should make some provision for the proper treatment of sewage comprising the most modern and complete methods of treatment that science can devise.

A Community Swimming Pool

A COMMUNITY swimming pool is money well invested and is one of the means by which young people can have city attractions in rural settings. At least, Belden, Nebr., with a population of 250, has found this to be so.

Five years ago a number of public-spirited men organized a company and sold 100 shares of stock at $10 a share. This paid for the material of the pool they had planned. The City Council gave permission to build the pool in the park near the water-tower. A pipe was connected to the overflow from the tank, and fresh water is constantly flowing into the basin.

The labor was free. When completed, the pool and dressing-house cost $1,100 above the donated work. The size of the basin is 30 by 60 feet, and the depth varies from 1½ to 9 feet.

The patronage exceeded all expectations. The nearest pool was 30 miles away, and scores of young people drove in from neighboring towns on Sunday afternoons and evenings to enjoy themselves. Several towns have followed Belden's example and built pools of their own. The pool has not only been self-supporting but has paid back a considerable part of the original outlay. It is the purpose of the builders to give the pool to the city when the receipts have paid for it.

C. O. RICHARDSON.

Sewerage and Sewage Treatment in New York State

Data Tabulated by and Published Through the Cooperation of the New York State Department of Health

PEOPLE living in the urban sections of New York State have realized for many years the necessity of having a public supply of water for domestic use and a public sewerage system for the collection and disposal of the household wastes. While formerly the rural communities were accustomed to consider running water in the home as a luxury, this is, generally speaking, no longer the case, and public water-supply and sewerage systems are now considered necessities. At present over 300 municipalities in the state are provided with sewer systems. This represents a population of over 8½ million, or 78 per cent of the population of the state.

In order to prevent the serious pollution of streams and the creation of local nuisances, the treatment of the sewage is in many instances necessary. Twenty cities and ninety other municipalities have provided works for the treatment of the sewage. In terms of population, this means that sewage treatment works are provided for 1½ million people, or about 14 per cent of the population.

DESCRIPTIVE DATA OF SEWERAGE AND SEWAGE TREATMENT SYSTEMS IN NEW YORK STATE

MUNICIPALITY	Population	Sewer Systems				Sewage Treatment Works				Stream Receiving Effluent
		Population Served, Per Cent	Date of Original Construction	Separate or Combined	Miles of Sewers	Population Served, Per Cent	Date of construction	Sewage Treated (Gallons per Day	Character of Works	
Akron	2,123	†	1926	Sep.	.....	†	.....	.....	Imhoff tank	Murder Creek
Albany	117,820	95	.....	Com.	.....	95	1915	14,600,000	Grit chamber, pump station, Imhoff tanks	Hudson River
Albion	5,206	95	1915	Sep.	.....	90	1915	400,000	Grit chamber, Imhoff tank, contact beds	Sandy Creek
Alexandria Bay	2,130	100	.....	Both	.....	.....	.....	.....	.....	St. Lawrence River
Allegany	1,325	.....	.....	Sep.	.....	.....	.....	.....	.....	Allegany River
Altamont	915	50	1917	Sep.	.....	50	1917	200,000	Imhoff tank, sprinkling filter, settling tank, chlorination	Bozen Kill
Amherst, dist. 1	2,500	100	.....	Sep.	.....	100	.....	.....	Imhoff tank, sprinkling filter	Ellicott Creek
Amsterdam	35,260	100	.....	Com.	.....	.....	.....	.....	.....	Mohawk River
Andover	1,151	25	.....	.....	.....	.....	.....	.....	.....	Dyke Creek
*Angola	1,475	60	.....	.....	.....	.....	.....	.....	.....	Big Sister Creek
*Antwerp	927	10	.....	.....	.....	.....	.....	.....	.....	Indian River
*Arcade	1,604	67	.....	.....	.....	.....	.....	.....	.....	Cattaraugus Creek
Athens	1,747	†	1926	Sep.	5¾	.....	.....	.....	.....	Hudson River
*Attica	2,125	50	.....	.....	.....	.....	.....	.....	.....	Tonawanda Creek
Auburn	35,677	100	.....	Both	78	8.2	1910	300,000	Grit chamber, plain settling tanks, contact beds	Owasco Outlet
						12.3	1908	400,000	Grit chamber, plain settling tanks, contact beds	Owasco Outlet
*Aurora	376	10	.....	.....	.....	.....	.....	.....	.....	Cayuga Lake
Avon	2,470	60	.....	Sep.	7	60	1912	.....	Imhoff tank	Genesee River
Bainbridge	1,339	20	.....	Sep.	.....	.....	.....	.....	Plain settling tank	Susquehanna River
Baldwinsville	3,891	95	.....	Sep.	10	.....	.....	.....	.....	Seneca River
Ballston Spa	4,476	90	1907	Sep.	.....	90	1906	1,000,000	Plain settling tanks, primary and secondary contact beds	Kayaderosseras Cr.
Batavia	15,628	100	1906	Sep.	.....	100	1912	2,040,000	Imhoff tanks, sprinkling filters	Tonawanda Creek
Beacon	11,621	90	1898	Sep.	18	38	1907	1,400,000	Grit chamber, plain settling tanks, contact beds	Fishkill Creek and Hudson River
*Belmont	1,021	50	.....	.....	.....	.....	.....	.....	.....	Genesee River
Binghamton	71,915	99	1878	Com.	.....	.....	.....	.....	.....	Susquehanna River
Blasdell	1,507	60	1925	Sep.	.....	60	1925	.....	Imhoff tanks, sprinkling filters, final settling tank, chlorination	Rush Creek
Bloomingdale	422	60	1926	Sep.	1	.....	.....	.....	.....	Sumner Brook
Bolivar	1,385	.....	.....	.....	.....	.....	1927	.....	Imhoff tanks, sprinkling filters	Little Genesee Creek
Boonville	2,096	70	1900	Com.	.....	.....	.....	.....	.....	Mill Creek
*Brainardsville	250	50	.....	.....	.....	.....	.....	.....	.....	Chateaugay River
Brewster	1,569	.....	1893	Sep.	.....	.....	1926	10,000	Chlorination, plain settling tank, sand filter	Croton River
Briarcliff Manor	1,451	95	.....	Sep.	.....	60	.....	.....	Plain settling tanks, sand filters	Pocantico River
(2 plants)						35	1923	.....	Plain settling tanks	Hudson River
Brighton, dist. 1	4,000	.....	1916	Sep.	.....	.....	1916	.....	Imhoff tanks, sand filters	Allen Creek
Brockport	3,626	60	1904	Sep.	14	60	1916	.....	Imhoff tanks, sprinkling filter	Salmon Creek
Bronxville	4,040	100	.....	Sep.	.....	.....	.....	.....	.....	Bronx Valley Sewer
Brownville	969	75	1924	Sep.	.....	.....	.....	.....	.....	Black River
Buffalo	538,016	98	1845	Com.	550	.....	.....	.....	.....	Niagara River
Camden	2,105	†	1926–7	Sep.	7	†	1926–7	.....	Imhoff tank	.....
*Camillus	1,032	50	.....	.....	.....	.....	.....	.....	.....	Nine Mile Creek
Canajoharie	2,793	90	.....	Sep.	.....	.....	.....	.....	.....	Mohawk River
Canandaigua	7,686	90	.....	Sep.	17	90	1922	.....	Imhoff tank	Canandaigua Outlet
Canastota	4,223	100	.....	Both	.....	.....	.....	.....	.....	Canastota Creek
Canton	2,704	100	1889	Sep.	.....	.....	.....	.....	.....	DeGrasse River
Cape Vincent	946	100	.....	Com.	.....	.....	.....	.....	.....	St. Lawrence River
Carthage	4,535	60	.....	.....	.....	.....	.....	.....	.....	Black River
Castleton	1,681	60	.....	Com.	.....	.....	.....	.....	.....	Hudson River
Catskill	5,307	100	1800	Sep.	12	.....	.....	.....	.....	Hudson River
*Cattaraugus	1,359	10	.....	Sep.	.....	.....	.....	.....	.....	Cattaraugus Creek
Cazenovia	1,776	90	1893	Sep.	12	.....	.....	.....	.....	Chittenango Creek
Celeron	1,306	8	1902	.....	1½	.....	.....	.....	.....	Chadakoin River
*Champlain	1,273	45	.....	.....	1	.....	.....	.....	.....	Big Chazy River
Chateaugay	1,391	90	.....	.....	.....	.....	.....	.....	.....	Chateaugay River
*Chautauqua Inst	1,000w. 15,000s.	100	.....	Sep.	.....	.....	.....	.....	Chemical precipitation, chlorination (hypo)	Chautauqua Lake
Clayton	1,942	.....	1899	.....	.....	.....	.....	.....	.....	St. Lawrence River
*Clayville	1,049	15	.....	.....	.....	.....	.....	.....	.....	Sauquoit Creek
Clinton	1,433	100	.....	6	.....	.....	.....	.....	.....	Oriskany Creek
Clyde	2,652	25	1921	Sep.	1½	25	1921	.....	Plain settling tanks	Clyde River
Cobleskill	2,585	75	.....	.....	.....	.....	.....	.....	.....	Cobleskill Creek
Cohoes	23,345	95	1852	Com.	.....	.....	.....	.....	.....	Mohawk and Hudson Rivers
Cold Spring	1,494	100	1910	Sep.	10	.....	.....	.....	.....	Hudson River

* Prvate sewer system † Under construction.

DESCRIPTIVE DATA OF SEWERAGE AND SEWAGE TREATMENT SYSTEMS IN NEW YORK STATE

MUNICIPALITY	Population	Sewer Systems: Population Served, Per Cent	Sewer Systems: Date of Original Construction	Sewer Systems: Separate or Combined	Sewer Systems: Miles of Sewers	Sewage Treatment Works: Population Served, Per Cent	Sewage Treatment Works: Date of construction	Sewage Treatment Works: Sewage Treated (Gallons per Day	Sewage Treatment Works: Character of Works	Stream Receiving Effluent
Colonie, dist. 22	1,700	60	1926	Sep.	5	60	1926	.....	Plain settling tank	Mohawk Basin
*Conifer	400	30	.....	Sep.	½	.....	.....	.....	Leaching cesspools	.....
Cooperstown	2,752	100	.....	Sep.	10	.....	.....	.....	.....	Susquehanna River
Corinth	2,547	90	1917	Sep.	.....	.....	.....	.....	Septic tanks	Hudson River
Corning	15,722	95	1886	Both	.....	.....	.....	.....	.....	Chemung River
Cortland	13,879	95	1895	Sep.	30	.....	.....	.....	.....	Tioughnioga River
Coxsackie	2,434	75	.....	Both	5½	.....	.....	.....	.....	Hudson River
*Croghan	796	50	.....	.....	.....	.....	.....	.....	.....	Beaver River
Croton-on-Hudson	2,193	85	1922	Sep.	4	.....	.....	.....	.....	Hudson River
Cuba	1,496	100	1924	Sep.	7	100	1924	.....	Imhoff tank	Oil Creek
Dannemora	2,955	90	.....	.....	.....	.....	.....	.....	(State Hospital sewers and treatment works used)	.....
Dansville	4,569	100	1907	Sep.	12	100	1907	.....	Septic tank	Canaseraga Creek
*Delhi	1,775	5	.....	.....	.....	.....	.....	.....	.....	Delaware River
Depew	6,122	80	1900	Sep.	.....	.....	.....	.....	Plain settling tank, contact beds, wave beds	Cayuga Creek
Dobbs Ferry	5,020	95	1880	Sep.	.....	.....	.....	.....	.....	Hudson River
Dolgeville	3,239	95	.....	Sep.	.....	.....	.....	.....	Septic tank	E. Canada Creek
Dunkirk	19,912	70	1871	Both	.....	.....	.....	.....	Voted in 1927	Dunkirk Harbor
East Aurora	4,641	50	1913	Sep.	16	50	1913	.....	Imhoff tanks, sprinkling filter	Cazenovia Creek
Eastchester Sewer Dist	4,000	100	1916	Sep.	.....	.....	.....	.....	.....	Hudson and Hutchinson Rivers
East Rochester	5,883	.....	1909	Both	.....	.....	1909	.....	Grit and screen chamber	Irondequoit Creek
East Syracuse	4,492	75	1906	Sep.	7½	.....	1913	.....	Plain settling tank	Headson Creek
*Ellicottville	983	15	.....	.....	.....	.....	.....	.....	.....	Great Valley Creek
Elmira	48,350	100	1885	Com.	70	.....	.....	.....	.....	Chemung River
Endicott	15,627	100	.....	Both	.....	.....	.....	.....	.....	Susquehanna River
Fairport	4,441	95	.....	Both	12	95	1913	.....	Grit chamber, plain settling tank	Thomas Creek
Fonda	1,232	90	.....	.....	2	.....	.....	.....	.....	Mohawk River
Fort Edward	3,631	90	.....	Sep.	.....	.....	.....	.....	.....	Hudson River
Fort Plain	2,906	100	1892	Sep.	.....	.....	.....	.....	.....	Mohawk River
Frankfort	4,416	.....	.....	Sep.	.....	.....	.....	.....	Imhoff tank	Mohawk River
*Franklin	502	20	.....	Sep.	.....	.....	.....	.....	.....	Ouleout Creek
Franklinville	2,117	75	1912	Sep.	8	75	1912	350,000	Imhoff tank, broad irrigation	Ischua Creek
Fredonia	6,293	80	.....	Both	.....	.....	.....	.....	.....	Canadaway Creek
Freeport	13,903	.....	1927	.....	.....	.....	.....	.....	.....	.....
Fulton	12,571	95	1896	Sep.	22	20	1911	307,800	Plain settling tanks	Oswego River
Fultonville	1,006	100	1910	Sep.	5¾	100	1910	.....	Plain settling tanks	Mohawk River
Garden City	3,141	100	1902	Sep.	40	100	1925	.....	Plain settling tanks, sludge digestion tank, natural sand filters	Ground waters
Geneseo	2,338	95	1890	Sep.	7¾	.....	.....	.....	.....	Genesee River
Geneva	15,908	.....	1896	.....	.....	.....	.....	.....	.....	Seneca Lake
Glen Cove	10,822	80	1892	Sep.	22	80	1927	1,200,000	Imhoff tank, chlorination	Hempstead Harbor
Glens Falls	17,851	95	1892	Both	.....	.....	.....	.....	.....	Hudson River
Gloversville	22,110	100	1891	Sep.	.....	100	1912	3,000,000	Dortmund tanks, sprinkling filters, final tanks, sand filters	Cayadutta Creek
Goshen	2,945	66	1914	Sep.	10	66	1914	216,000	Plain settling tanks, sand filters	Rio Grande
*Gouverneur	4,111	75	.....	Sep.	.....	.....	.....	.....	.....	Oswegatchie River
Gowanda	2,751	80	.....	.....	.....	.....	.....	.....	.....	Cattaraugus Creek
Granville	3,547	.....	.....	.....	.....	.....	.....	.....	(System and treatment under consideration)	.....
Great Neck Sewer District	4,000	95	1916	Sep.	10–12	95	1916	275,000	Plain settling tanks, chlorination	Manhasset Bay
*Greene	1,363	70	.....	Sep.	.....	.....	.....	.....	.....	Chenango River
Green Island	4,510	.....	1887	Com.	.....	.....	.....	.....	.....	Hudson River
Greenport, Dist. 1	1,000	.....	1926	Sep.	1.9	.....	1926	.....	Plain settling tank	Claverack Creek
*Greenport (V)	2,991	60	.....	Sep.	.....	55	1926	100,000	Plain settliag tank, chlorination	Greenport Harbor
(2 plants)	.....	.....	.....	.....	.....	5	1926	5,000	Plain settling tank, chlorination	Stirling Basin
*Groton	2,072	50	.....	.....	.....	.....	.....	.....	.....	Owasco Inlet
Hamburg	3,932	100	1925	Sep.	.....	.....	1925	.....	Imhoff tank, chlorination	Eighteen Mile Creek
*Hancock	1,481	75	.....	.....	.....	.....	.....	.....	.....	Delaware River
Harrison, Dist. 1	6,000	100	1914	Sep.	5	100	1914	600,000	Imhoff tanks, sprinkling filter, chlorination, final settling tanks	Beaver Swamp Creek
Hartsdale Sr. Dist	.....	.....	.....	.....	.....	.....	.....	.....	.....	Bronx Valley Sewer
Hastings-on-Hudson	6,311	95	.....	.....	.....	.....	.....	.....	.....	Hudson River
Haverstraw	5,925	100	1900–17	Sep.	.....	.....	.....	.....	.....	Hudson River
Hempstead	9,952	90	1911–17	Sep.	29	90	1917	700,000	Plain settling tanks, natural sand filters	Ground waters
Herkimer	10,910	.....	.....	Sep.	.....	.....	.....	.....	.....	Mohawk River
*Herrings	200	50	.....	.....	½	.....	.....	.....	.....	Black River
Hobart	636	100	1912	Sep.	4	100	1912	100,000	Plain settling tanks, sand filters	Delaware River
Holley	1,705	70	1914	Sep.	6¾	70	1914	.....	Imhoff tanks, sprinkling filters	Sandy Creek
*Honeoye Falls	1,204	50	.....	Sep.	2	.....	.....	.....	.....	Honeoye Creek
Hoosick Falls	5,050	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hornell	15,784	90	1893	Sep.	20	.....	.....	.....	.....	Canisteo River
Hudson	11,755	100	1871	Com.	25	.....	.....	.....	.....	Hudson River
Hudson Falls	6,206	.....	.....	Both	.....	.....	.....	.....	.....	Hudson River
Huntington Sewer Dist	6,500	85	1917	Sep.	15	85	1917	350,000	Imhoff tanks, chlorination	Huntington Harbor
Ilion	10,426	98	.....	Sep.	13	.....	.....	.....	.....	Mohawk River
Irondequoit (T) Summerville Sewer Dist.	3,000	100	1908	Sep.	.....	100	1908	180,000	Plain settling tanks, sprinkling filters	Genesee River
Irvington	3,296	100	1898	Com.	.....	.....	.....	.....	.....	Hudson River
Ithaca	18,948	90	1896	Sep.	33	90	1907	2,454,000	Plain settling tanks	Cayuga Lake
Jamestown	43,414	90	1894	Sep.	.....	†	1927	.....	Imhoff tanks, chlorination	Cassadaga Creek
Johnson City	11,169	.....	1905	Both	.....	.....	.....	.....	.....	Susquehanna River
Johnstown	10,712	99	1876	Sep.	.....	.....	.....	.....	.....	Cayadutta Creek
*Keeseville	1,716	.....	.....	.....	.....	.....	.....	.....	.....	Ausable River
Kenmore	6,521	100	.....	Sep.	.....	.....	.....	.....	(Through Buffalo sewers)	.....
Kensington	507	.....	.....	.....	.....	.....	.....	.....	(In Great Nack Sewer Dist.)	.....
Kingston	28,099	72	1872	Both	.....	.....	.....	.....	.....	Rondout Creek
Lackawanna	20,196	72	1909	Sep.	.....	.....	1926	1,000,000	Grit chamber, Imhoff tanks, sprinkling filters, final settling tanks, chlorination	Smoke Creek
Lake Placid	2,473	100	.....	Sep.	.....	100	.....	800,000	Plain settling tanks, sand filters	Chubb River
*Lakewood	1,595	6	.....	.....	.....	6	.....	.....	Septic tanks	Chautauqua Lake
Lancaster	6,748	100	1910	Sep.	35	100	1910	.....	Grit chamber, plain settling tanks, contact beds	Cayuga Creek
Larchmont	3,915	95	.....	Sep.	.....	.....	1926	400,000	Plain settling tanks, digestion tanks, chlorination	Larchmont Harbor
*LaSalle	6,258	25	.....	Both	.....	.....	.....	.....	.....	Cayuga Creek
*Lawtons	100	25	1915	Sep.	.....	.....	.....	.....	.....	Cattaraugus Creek
Liberty	3,075	100	1900	Sep.	7½	100	1900	500,000	Plain settling tank, contact beds, cinder filters	Mongaup River
*Lily Dale	2,000	95	1917	Sep.	2	95	.....	175,000	Plain settling tank, chlorination	Cassadaga Lake
*Lisle	297	10	.....	.....	.....	.....	.....	.....	.....	Tioughnioga River
Little Falls	12,428	95	1882	.....	.....	.....	.....	.....	.....	Mohawk River
Livonia	823	50	.....	Com.	.....	.....	.....	.....	.....	Trib. Conesus Lake

* Private sewer system. † Under construction.

DESCRIPTIVE DATA OF SEWERAGE AND SEWAGE TREATMENT SYSTEMS IN NEW YORK STATE

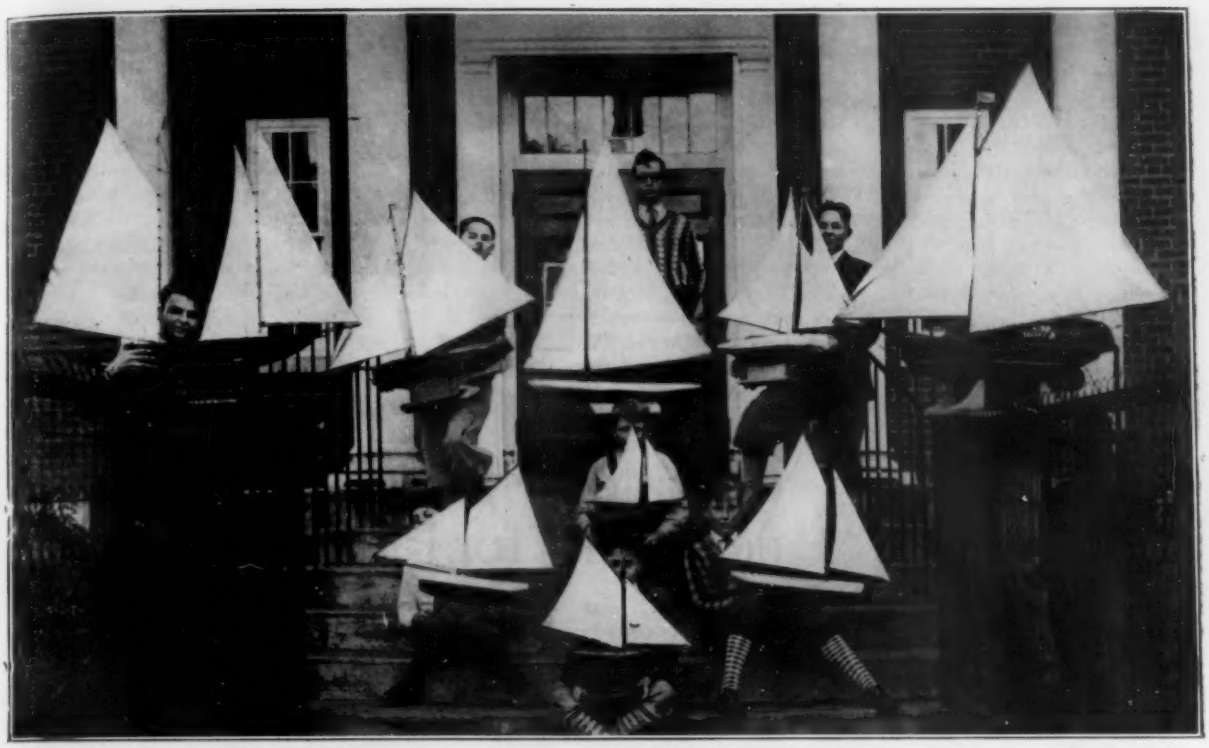
MUNICIPALITY	Population	Sewer Systems				Sewage Treatment Works				Stream Receiving Effluent
		Population Served, Per Cent	Date of Original Construction	Separate or Combined	Miles of Sewers	Population Served, Per Cent	Date of construction	Sewage Treated (Gallons per Day	Character of Works	
Lockport	21,676	90	1850	Com.	.....	.....	.....	.....	.....	18 Mile Creek and Erie Canal
Long Beach	2,891	100	1912	Sep.	20	100	1926	1,500,000	Plain settling tanks, chlorination	Atlantic Ocean
Lowville	3,427	75	.....	.....	.....	.....	.....	.....	.....	Black River & trib.
Lyons	4,275	65	1916	Sep.	15	65	1916	160,000	Grit chamber, Imhoff tank, sprinkling filter	Black Brook
*McKownville	300	100	1913	Com.	1–2	.....	.....	.....	.....	Ditch
*Malone	8,820	90	.....	Sep.	.....	.....	.....	.....	.....	Salmon River
Mamaroneck (V)	10,153	40	.....	Sep.	.....	40	1925	1,000,000	Fine screens, activated sludge	Mamaroneck Harbor
Mamaroneck Sewer Dist. No. 1	.....	.....	.....	.....	.....	.....	1922	95,000	Plain settling tank, digestion tank, chlorination	Larchmont Harbor
Manhasset	.....	.....	.....	.....	.....	.....	.....	.....	(In Great Neck Sewer Dist.)	.....
*Manlius	1,669	50	.....	.....	.....	.....	.....	.....	.....	Limestone Creek
*Marcellus	1,110	.....	.....	.....	.....	.....	.....	.....	.....	Nine Mile Creek
*Martinsburg	300	30	.....	.....	.....	.....	.....	.....	.....	Roaring Brook
Massena	5,907	100	.....	Sep.	.....	.....	.....	.....	.....	DeGrasse and Raquette Rivers
Mechanicville	8,514	100	1895	Sep.	.....	.....	.....	.....	.....	Hudson River
Medina	6,192	95	.....	Sep.	37	.....	.....	.....	.....	Oak Orchard Creek
Menands	1,449	100	1895	Sep.	.....	.....	.....	.....	.....	Hudson River
*Mexico	1,203	5	.....	.....	½	.....	.....	.....	.....	Black Creek
Middleport	1,537	90	1913	Sep.	8	.....	1913	40,000	Imhoff tank, sprinkling filters	Trib. of Johnson Cr.
Middletown	20,412	90	.....	Sep.	.....	.....	.....	.....	.....	Mohegan Brook
*Middleville	947	.....	.....	.....	.....	.....	.....	.....	.....	West Canada Creek
Milford	570	33	1906	Sep.	1	.....	.....	.....	.....	Susquehanna River
Mohawk	3,017	90	.....	.....	.....	.....	.....	.....	.....	Mohawk River
Monticello	3,529	65	1911	Sep.	10	65	1911	900,000	Plain settling tanks, contact beds, sand filters	Cold Spring Brook
Mount Kisco	4,161	80	1908	Sep.	.....	80	1908	.....	Plain settling tanks, contact beds, chlorination	Kisco River
Mount Morris	3,555	100	1916	Sep.	6	100	1916	.....	Imhoff tank	Canaseraga Creek
Mount Vernon	50,382	98	1887	Sep.	65	80	1910	3,000,000	Grit chamber, plain settling tanks, sprinkling filters, final settling tank	Hutchinson River
Nelliston	624	†	1926–7	Sep.	.....	.....	.....	.....	.....	Mohawk River
Newark	7,309	75	.....	Sep.	16	75	1914	750,000	Grit chamber, Imhoff tank, sprinkling filter, final settling tank	Military Brook
*New Berlin	1,035	67	.....	.....	.....	.....	.....	.....	.....	Unadilla River
Newburgh	30,419	90	1875	Com.	.....	.....	.....	.....	.....	Hudson River
New Hartford	1,699	100	1897	Sep.	.....	.....	.....	.....	(Through New Hartford Sewer District No. 1 plant)	.....
New Hartford Sewer Dist. No. 1	.....	100	1912	Sep.	.....	.....	1912	.....	Imhoff tank	Sauquoit Creek
*New Paltz	1,269	45	.....	.....	.....	.....	.....	.....	.....	Wallkill River
New Rochelle	44,222	100	1889	Sep.	.....	.....	1926	.....	Fine screens, digestion tank, chlorination	Long Island Sound
New York	5,873,356	100	.....	Both	.....	10	.....	.....	Fine screens, chlorination (10 plants)	New York Harbor
New York Mills	4,610	100	1926	Sep.	8	.....	1925	.....	Plain settling tanks	Sauquoit Creek
Niagara Falls	57,033	95	1891	Com.	.....	.....	.....	.....	.....	Niagara River
Niskayuna Sewer Dist. No. 1	.....	.....	.....	Sep.	.....	.....	.....	.....	(Through Schenectady Sewer System)	Mohawk River
Niskayuna Sewer Dist. No. 2	.....	.....	.....	Sep.	.....	.....	.....	.....	(Through Schenectady Sewer System)	Mohawk River
North Collins	1,120	33	1900	Sep.	7	.....	.....	.....	.....	Beaver Meadow Cr.
*North Creek	500	25	.....	.....	.....	.....	.....	.....	.....	Hudson River
North Elba Sewer Districts	.....	.....	.....	Sep.	.....	.....	.....	.....	(Through Lake Placid treatment works)	.....
North Pelham	4,013	.....	.....	Sep.	.....	.....	.....	.....	(Through Pelham Town disposal plant)	Hutchinson River
Northport	2,587	10	.....	Com.	.....	.....	.....	.....	(System and treatment works being proposed)	Northport Harbor
North Tarrytown	7,013	90	.....	Both	.....	.....	.....	.....	.....	Hudson River
North Tonawanda	17,356	90	1889	Com.	26	.....	.....	.....	.....	Niagara River
Norwich	8,345	100	1860	Sep.	19	.....	.....	.....	.....	Chenango River
Norwood	1,971	50	.....	Sep.	.....	.....	.....	.....	.....	Raquette River
Nyack	4,917	90	.....	Sep.	.....	.....	.....	.....	.....	Hudson River
Oakfield	2,072	25	1926–7	Sep.	7	25	1926–7	.....	Imhoff tank	Oak Orchard Creek
Ocean Beach	156	100	1917	Sep.	1⅓	100	1917	70,000	Imhoff tank, chlorination	Great South Bay
Ogdensburg	17,047	100	1865	Com.	14	.....	.....	.....	.....	St. Lawrence River
Old Forge	767	100	1916	Sep.	.....	.....	.....	.....	.....	Moose River
Olean	21,332	60	1894	Com.	.....	.....	.....	.....	.....	Allegany River
Oneida	10,656	80	1896	Sep.	.....	80	1924	1,000,000	Plain settling tanks, digestion tank	Oneida Creek
Oneonta	12,057	90	1892	Sep.	.....	.....	.....	.....	.....	Susquehanna River
*Orchard Park	991	2	.....	.....	½	.....	.....	.....	.....	Open ditch
Oriskany	1,177	80	1919	Sep.	4.3	80	1919	.....	Grit chamber, Imhoff tank	Oriskany Creek
*Oriskany Falls	916	50	.....	.....	.....	.....	.....	.....	.....	Oriskany Creek
Ossining	12,769	100	1889	Sep.	25	.....	.....	.....	.....	Hudson River
Oswego	22,369	100	1871	Com.	51	.....	1914	.....	Imhoff tank (never used)	Lake Ontario and Oswego River
Owego	4,743	66	.....	.....	.....	.....	.....	.....	.....	Susquehana River
Oxford	1,695	10	.....	.....	.....	.....	.....	.....	.....	Chenango River
Oyster Bay	.....	.....	.....	.....	.....	.....	.....	.....	(System and treatment works to be constructed)	.....
Painted Post	2,213	50	1923	Sep.	7	50	1923	.....	Grit chamber, Imhoff tank	Cohocton River
Patchogue	5,116	43	1882	Sep.	¾	43	1926–7	120,000	Plain settling tanks, chlorination	Patchogue Creek
Peekskill	17,993	90	.....	Both	.....	.....	.....	.....	.....	Hudson River
Pelham (T)	9,085	95	.....	Sep.	20	95	1912	640,000	Grit chamber, plain settling tanks, springling filters	Hutchinson River
Pelham (V)	1,734	.....	.....	.....	.....	.....	.....	.....	(Included in Pelham (T) system)	.....
Pelham Manor	3,338	.....	.....	.....	.....	.....	.....	.....	(Included in Pelham (T) system)	.....
Penn Yan	5,326	80	1904	Sep.	13½	80	1904	763,300	Grit chamber, plain settling tank, contact beds	Keuka River
Perry	4,636	100	1901	Sep.	11	.....	.....	.....	.....	Silver Lake Outlet
*Philadelphia	815	75	.....	.....	.....	.....	.....	.....	.....	Indian River
Phoenix	1,711	.....	.....	Sep.	.....	.....	.....	.....	.....	Brandy Brook
Piermont	1,539	75	1916	Sep.	2	75	1916	.....	.....	Hudson River
Pittsford Sewer Dist.	500	.....	.....	Sep.	.....	.....	.....	.....	(Through Brighton Sewer district)	.....
Plattsburg	11,552	100	.....	Com.	.....	.....	.....	.....	.....	Lake Champlain
Pleasantville	3,674	50	1925	Sep.	6	50	1925	.....	Imhoff tank, contact beds, final setling tanks, sand filters	Sawmill River
Point-O-Woods	1,000	100	.....	Sep.	2	100	.....	.....	Plain settling tanks, sub-surface irrigation	Ground waters
Port Chester	19,283	75	.....	Sep.	.....	60	1919	3,000,000	Imhoff tank	Port Chester Harbor
Port Henry	2,072	90	1871	Com.	.....	.....	.....	.....	.....	Lake Champlain
Port Jefferson	1,200	100	1918	Sep.	3	100	.....	.....	Plain settling tank	Port Jefferson Harbor
Port Jervis	10,507	100	1891	Sep.	19	.....	.....	.....	.....	Delaware and Neversink Rivers
*Port Leyden	746	.....	.....	.....	.....	.....	.....	.....	.....	Black River

* Private sewer system. † Under construction.

DESCRIPTIVE DATA OF SEWERAGE AND SEWAGE TREATMENT SYSTEMS IN NEW YORK STATE

MUNICIPALITY	Population	Sewer Systems				Sewage Treatment Works				Stream Receiving Effluent
		Population Served, Per Cent	Date of Original Construction	Separate or Combined	Miles of Sewers	Population Served, Per Cent	Date of construction	Sewage Treated (Gallons per Day	Character of Works	
Port Washington Sewer Dist. 1	6,000	90	1916	Sep.	12	90	1916	325,000	Grit chamber, Imhoff tank, chlorination	Manhasset Bay
Potsdam	4,472	100	.....	Both	5	.....	.....	.....	.....	Raquette River
Poughkeepsie	35,670	95	1872	Both	.....	.....	.....	.....	.....	Hudson River
*Raquette Lake	100	100	.....	.....	.....	100	.....	.....	Plain settling tank	Raquette Lake
Ravena	1,944	95	.....	Sep.	4–5	95	.....	90,000	Imhoff tank	Onisquethau Creek
Rensselaer	11,394	90	1870	Com.	.....	.....	.....	.....	.....	Hudson River
Richfield Springs	1,421	90	1885	Sep.	.....	.....	1927	.....	Imhoff tank	Ocquionis Creek
*Riverhead	3,590	20	.....	Com.	3	.....	.....	.....	.....	Peconic River
Rochester	316,785	90	1820	Both	.....	.....	.....	.....	.....	.....
Main Plant	.....	.....	.....	.....	.....	80	1914	36,500,000	Fine screens, grit chambers, Imhoff tanks	Lake Ontario
Brighton Plant	.....	.....	.....	.....	.....	3	1916	1,000,000	Grit chamber, Imhoff tank, sprinkling filter	Irondequoit Creek
Charlotte Plant	.....	.....	.....	.....	.....	7	1921	1,000,000	Detritus chamber, Imhoff tank	Genesee River
Rockville Center	10,316	.....	.....	.....	.....	.....	.....	.....	(System and treatment works being proposed)	.....
Rome	30,328	100	1897	Sep.	.....	.....	.....	.....	.....	Wood Creek and Mohawk River
*Round Lake	100	100	1887	Sep.	1.7	100	1890	.....	Plain settling tank	Round Lake
Rouses Point	1,757	.....	1890	Both	.....	.....	.....	.....	.....	Lake Champlain
*Roxbury	600	33	.....	.....	.....	.....	.....	.....	.....	Delaware River
Rye	6,698	65	1910	Sep.	9	65	1910	.....	Plain settling tanks, sprinkling filters, final settling tanks	Long Island Sound
Sackett Harbor	775	.....	.....	.....	.....	.....	.....	.....	(System being proposed)	.....
Sag Harbor	3,118	.....	.....	.....	.....	.....	.....	.....	(System being proposed)	.....
St. Johnsville	2,568	50	1906	Sep.	.....	.....	.....	.....	.....	Mohawk River
Salamanca	9,878	100	1880	Sep.	32	.....	.....	.....	.....	Allegany River
Sandy Creek	655	.....	.....	Both	.....	.....	.....	.....	.....	Sandy Creek
Saranac Lake	6,579	100	.....	Sep.	.....	.....	.....	.....	.....	Saranac River
Saratoga Springs	13,884	100	.....	Sep.	.....	100	1903	1,000,000	Plain settling tanks, aerator, sand filters	Village Brook
Saugerties	4,228	95	1905	.....	10	95	1905	.....	Plain settling tanks	Esopus Creek
Scarsdale	5,099	90	.....	Sep.	.....	.....	.....	.....	(Through Bronx Valley Trunk Sewer)	Hudson River
Schenectady	92,786	100	1883	Sep.	.....	50	1915	8,700,000	Imhoff tanks, sprinkling filters	Mohawk River
Scotia	5,562	92	1906	Sep.	.....	.....	.....	132,000	.....	Mohawk River
Scottsville	929	100	1924	Sep.	6.1	100	1924	.....	Plain settling tanks	Allen Creek
Seneca Falls	6,477	60	1908	Sep.	2	60	1909	291,000	Grit chamber, plain settling tanks	Seneca River
Sharon Springs	447	75	.....	Sep.	3	.....	1909–13	156,000	Plain settling tanks, stone filters, final settling tanks	Brimstone Creek
*Shelter Is. Heights	1,300	100	.....	Sep.	.....	100	1925	60,000	Plain settling tank, chlorination	Shelter Island Sound
Sherrill	2,082	95	1911	Sep.	8	.....	.....	.....	.....	Oneida Creek
Sidney	2,499	80	1893	Sep.	.....	.....	.....	.....	.....	Susquehanna River
*Silver Creek	3,278	85	.....	Com.	5	.....	.....	.....	.....	Trib. to Lake Erie
Skaneateles	1,760	80	1904	Sep.	10	80	1904	166,400	Grit chamber, plain settling tank	Skaneateles Creek
Sloan	2,353	90	1918	Sep.	15	.....	.....	.....	(Through Buffalo sewers)	Buffalo Creek
Solvay	7,562	100	.....	Sep.	.....	.....	.....	.....	.....	Onondaga Lake
*South Albany	50	100	1925	Sep.	.....	100	1925	.....	Plain settling tank, subsurface sand filter	Onisquethau Creek
So. Glens Falls	2,519	66	1911–17	Sep.	.....	.....	1913	.....	Plain settling tank	Hudson River
South Nyack	2,103	.....	.....	.....	.....	.....	.....	.....	.....	Hudson River
Spring Valley	3,779	100	.....	Sep.	18	100	.....	110,000	Imhoff tanks, chlorination, final settling tanks	Pascack Creek
*Springville	2,340	.....	.....	.....	.....	.....	.....	.....	.....	Cattaraugus Creek
Stamford	1,151	95	1893	Sep.	4	95	1925	.....	Plain settling tanks	Delaware River
Suffern	3,349	25	.....	Sep.	4	25	.....	.....	Imhoff tanks, chlorination	Ramapo River
Syracuse	182,003	95	1848	Com.	.....	95	1924	20,000,000	Grit chambers, Dorr tanks	Onondaga Lake
Eastwood system	5,059	100	1914	Sep.	.....	.....	1914	.....	2 plants, each Imhoff tanks, sprinkling filters	Ley Creek
Tannersville	826	100	1927	Sep.	.....	.....	1927	.....	Settling tanks, sand filters, chlorination	Gooseberry Creek
Tarrytown	6,199	95	.....	Sep.	17	.....	.....	.....	.....	Hudson River
*Theresa	868	.....	.....	.....	.....	.....	.....	.....	.....	Indian River
*Thousand Is. Park	3,000	100	.....	.....	.....	.....	.....	.....	.....	St. Lawrence River
Ticonderoga	3,858	.....	.....	Sep.	.....	.....	.....	.....	.....	Ticonderoga Creek
Tonawanda	11,292	95	1890	Both	.....	.....	.....	.....	.....	Niagara River
Tonawanda Sewer Dist. No. 1	.....	.....	.....	Sep.	.....	.....	.....	.....	(Through Buffalo sewers)	Niagara River
Tonawanda Sewer Dist. No. 2	11,000	100	1924	Sep.	.....	100	1924	.....	Imnoff tanks, chlorination	Niagara River
Troy	72,223	90	.....	Com.	.....	.....	.....	.....	.....	Hudson River
Tuckahoe	5,033	100	1907	Sep.	.....	.....	.....	.....	(Through Bronx Valley Sewer)	Hudson River
*Tupper Lake	3,041	33	.....	.....	.....	.....	.....	.....	.....	Raquette Pond
*Turin	286	25	.....	.....	.....	.....	.....	.....	.....	Mill Creek
*Tuxedo Park	2,700	100	.....	Sep.	.....	100	.....	.....	Plain settling tank, coke and sand filters	Ramapo River
*Unadilla	1,111	67	.....	.....	.....	.....	.....	.....	.....	Susquehanna River
Utica	101,694	95	1877	Com.	108	.....	.....	.....	.....	Mohawk River
Walden	4,487	80	1880	Both	.....	.....	.....	.....	.....	Wallkill River
Walton	3,511	10	.....	.....	.....	.....	.....	.....	.....	Delaware River
*Wanakah Sewer Dist.	250	.....	.....	.....	.....	.....	.....	.....	Imhoff tank, chlorination	Lake Erie
Wappingers Falls	3,351	90	1915	Sep.	4–5	90	1915	110,000	Imhoff tank	Wappinger Creek
Warsaw	3,404	50	.....	Com.	4–5	.....	.....	.....	.....	Oatka Creek
Waterford	3,239	100	.....	Com.	.....	.....	.....	.....	.....	Mohawk and Hudson Rivers
Waterloo	3,921	100	.....	Sep.	.....	.....	.....	.....	Imhoff tanks	Seneca River
Watertown	32,836	95	1888	Both	28–30	.....	.....	.....	.....	Black River
Watervliet	16,158	100	1886	Sep.	.....	.....	.....	.....	.....	Hudson River
Watkins	2,919	75	1890	Sep.	.....	.....	.....	.....	.....	Seneca Lake
Waverly	5,578	50	.....	.....	.....	.....	.....	.....	.....	Cayuta Creek
Webster	1,453	†	.....	.....	.....	.....	.....	.....	.....	.....
*Wells Bridge	125	75	.....	.....	.....	.....	.....	.....	.....	Susquehanna River
Wellsville	4,853	98	.....	Sep.	.....	.....	.....	.....	.....	Genesee River
West Carthage	1,616	.....	.....	Sep.	7	.....	.....	.....	.....	Black River
Westfield	3,587	40	1912	Sep.	14	40	1912	300,000	Grit chamber, plain settling tanks, contact beds	Chautauqua Creek
*W. Haverstraw	2,715	33	.....	.....	1½	33	1920	.....	Plain settling tanks, chlorination	Minisceongo Creek
*West Point	3,500	.....	.....	.....	.....	.....	.....	.....	.....	Hudson River
*Westport	731	90	.....	.....	.....	.....	.....	.....	.....	Lake Champlain
West Seneca Sewer Districts	.....	.....	.....	.....	.....	.....	.....	.....	(Through Buffalo system)	.....
Whitehall	5,662	95	1885	Com.	25	.....	.....	.....	.....	Lake Champlain
White Plains	27,428	95	1892	Sep.	.....	.....	.....	.....	(Through Bronx Valley Trunk Sewer)	Hudson River
Whitesboro	3,268	90	.....	Sep.	.....	.....	.....	.....	.....	Mohawk River
Williamsville	2,542	†	.....	.....	.....	.....	.....	.....	(Through Amherst Sewer District)	.....
Wilson	721	100	.....	Sep.	.....	100	.....	.....	Imhoff tank, chlorination	Lake Ontario
Yonkers	113,647	80	.....	Both	.....	.....	.....	.....	.....	Hudson River
Yorkville	1,681	95	1911–14	Sep.	.....	.....	.....	.....	Plain settling tanks	Mohawk River

* Private sewer system. † Under construction.



MEMBERS OF THE MODEL YACHT CLUB LEAVING THE CLUB HEADQUARTERS AT SOUTH BRANCH, BRIDGEPORT PUBLIC LIBRARY, FOR A RACE

Model Yacht Club Inspires Seacraft and Handcraft

By ANGELINE SCOTT DONLEY
LIBRARIAN, SOUTH BRANCH, BRIDGEPORT PUBLIC LIBRARY

THE Model Yacht Club, with headquarters at South Branch Public Library, Bridgeport, Conn., is an activity which engages the enthusiasm and the creative energies of youngsters of the difficult and restless 14-to-18-year period. A competitive spirit is aroused among the members by public sailing contests which also have created a large and growing gallery of model-boat-race fans.

The club started modestly four years ago when one of the boys was presented a new boat the hull of which had been made by an expert, and which he had rigged himself. He confided to the Librarian at South Branch that he wished he knew some boys who had good boats, because he thought boat racing would be much more fun than the baseball games in which his friends were always so interested. The librarian helped him make a plan which resulted in a call meeting announced through the manual training classes of the public schools and the public library branches. A poster with the picture of a sailing ship was sent to each of these departments of schools and libraries in connection with the announcement, and eighteen boys, all strangers to each other, met and organized.

All work on models was to be done at home or in some workshop. Club meetings were to be devoted to the study of boat construction, to the rigging and sailing of boats, and to criticism by the club of members' models. Bridgeport is a "salt water" city, rich in the tradition of sailing in old "wind-jammer" days and of modern yachting; and experts were invited, and came, to the club to instruct the members in technicalities of the craft and in the etiquette of sailing regattas as well as in keeping scores of races.

There is a still-water pool at Seaside Park, a short quarter-mile from the South Branch Library, well adapted for model-boat races. Encouragement for racing is annually offered by the Board of Recreation in free-for-all contests in sailing and racing at the pool. Model Yacht Club members carried off most of the blue and red ribbons that first year, and Board of Recreation ribbons now adorn most of the model yachts in the annual exhibition in the library.

Last summer, the Model Yacht Club entered its first contest in open harbor sailing, competing in races with the Black Rock Toy Yacht Club. This was an especially interesting meet, since the Model Yacht Club entries were "problem" boats built of wood, and were entered in competition with bought boats, which were perfectly rigged toy yachts of hollow metal with rubber coating, sailed by younger boys. The Black Rock boats came in first, though every member of the Model Club thinks he might have won if only he'd set his sails a little differently. The new five-foot schooner, "Thistle," owned by Thomas Stobo of the Model Club, rounded the stake in fine form, even if a little less speedily than the Toys. The Club's own cup is held by the "Neptune," a racing model of Marconi rig, owned by Eugene Havanich, who built it himself when he was sixteen. Since that time Eugene has built a perfect little speed-boat 30 inches long, with its own engine built to scale with improvised materials. Its lines and wood finish are worthy of a professional model maker.

Edward Speer also built an electrically driven power boat 54 inches long, which sailed under its own power. He is an accomplished designer, who may study

ship designing as a vocation.

The boys' present ambition is to interest the Park Department in hard-surfacing the bottom of the pool, where mud and seaweed sometimes mar the pleasure of sailing. One of their ideals is the ultimate development of a club of adults who will be model-boat builders and who will maintain the sport as it is maintained in Central Park, New York, and in Prospect Park, Brooklyn. They have a standing invitation to attend a Saturday race at Prospect Park from a member who saw the Model Yacht Club collection at South Branch. (Perhaps they dream of being, themselves, star members of the club a few years hence.)

The Library has supplemented its annual August exhibition of Club-built yachts (which has become one of the chief features of summer programs) with a collection of pictures of yachts in races, yachts under way, full-rigged ships, historical ship models, and racing motor boats. Posters draw attention to the shelvesful of books about the sea and seacraft, and special exhibits of more-than-ordinarily interesting books of this sort are invitingly placed where they are pored over by many besides the club members.

In fact, the boat-building and boat-racing interest is having a wide influence in various directions. A number of teachers have brought classes to see the exhibitions and have used them as projects for report. One teacher of woodwork in a nearby school finds that the ambition of all of his advanced students has turned to boat building. Scout master and teachers have been interested in the club as an example of a self-directing activity for a boy group. Visitors are impressed by the fact that open meetings with a speaking guest are conducted with all the formality observed in adult clubs, the Commodore presiding and the other officers seated behind the speaker.

There is a fine spirit of cooperation among the members. The older boys are willing to admit even sixth graders (though membership generally is made up of boys of eight grade and high school ages) and to assist them in problems of rigging and sailing their models. All this leads up to an allied, though at first glance, independent interest which has grown up coincidentally with the boat building and sailing. It is an interest in the drawing of ships—Viking ships, clipper ships, four-mast schooners, men o' war, ocean freighters, and what not. One diminutive youngster from a nearby parochial school (who hadn't, by the way, arrived at the dignity of being trusted with pen and ink) inspirationally turned to drawing all sorts of ships with crayon on large sheets of paper copying first from books and posters, but later taking up a post on the sea-wall to sketch the passing craft on Long Island Sound. An older boy, who has also shown remarkable talent, last year designed the Club's three-panel poster, which manages to suggest all of the romance of sea tales. And there are others.

The Marine Club, organized last summer by the children's department of the library system as a vacation project for grade school children, had a membership in South Branch of 182. Among these were a flock of baby artists, busy all summer drawing boats and shells. One ten-year-old Pole showed especial talent in drawing from the models and specimens used. He would proudly throw back his little head when one of these was shown and exclaim: "I can draw that," and then he would prove that he could.

The character values derived from a self-determining organization; the appreciation of the historic and romantic backgrounds of their city, which is an old seaport; the urge to inventiveness and creativeness—these are a few of the by-products of this recreational activity.

A patron of the Library who is fond of the sea presented to the branch, in recognition of its nautical features, a miniature clipper ship in spun glass, which is about 75 years old and is valuable as a museum piece coveted by collectors of models.

Colorado Springs Spends $2.45 per Capita for Public Recreation

By GEORGE W. BRADEN

WESTERN REPRESENTATIVE PLAYGROUND & RECREATION ASSOCIATION OF AMERICA

DURING a recent visit to Colorado Springs I was deeply impressed by the scope, balance and popularity of the city's public recreation service. Facilities and program go all the way from marble shooting on the school and municipal playgrounds, where activities are under kindly and sympathetic leadership, to marvelous high line drives connecting all the way to Pike's Peak and picnicking under municipal auspices in that wonder place, the Garden of the Gods. Some may be surprised to know that the warm sunshine and dry climate make outdoor recreation possible nearly every day in the year in this favored spot. One day in December I counted 85 men at tables in the Civic Center Park playing checkers and chess.

With an estimated population of 36,000, an assessed valuation for 1927 of $41,024,890, and a tax rate of 14.2 mills, Colorado Springs, according to a recent report of City Manager A. M. Wilson, spent $2.47 per capita in 1927 for public recreation.

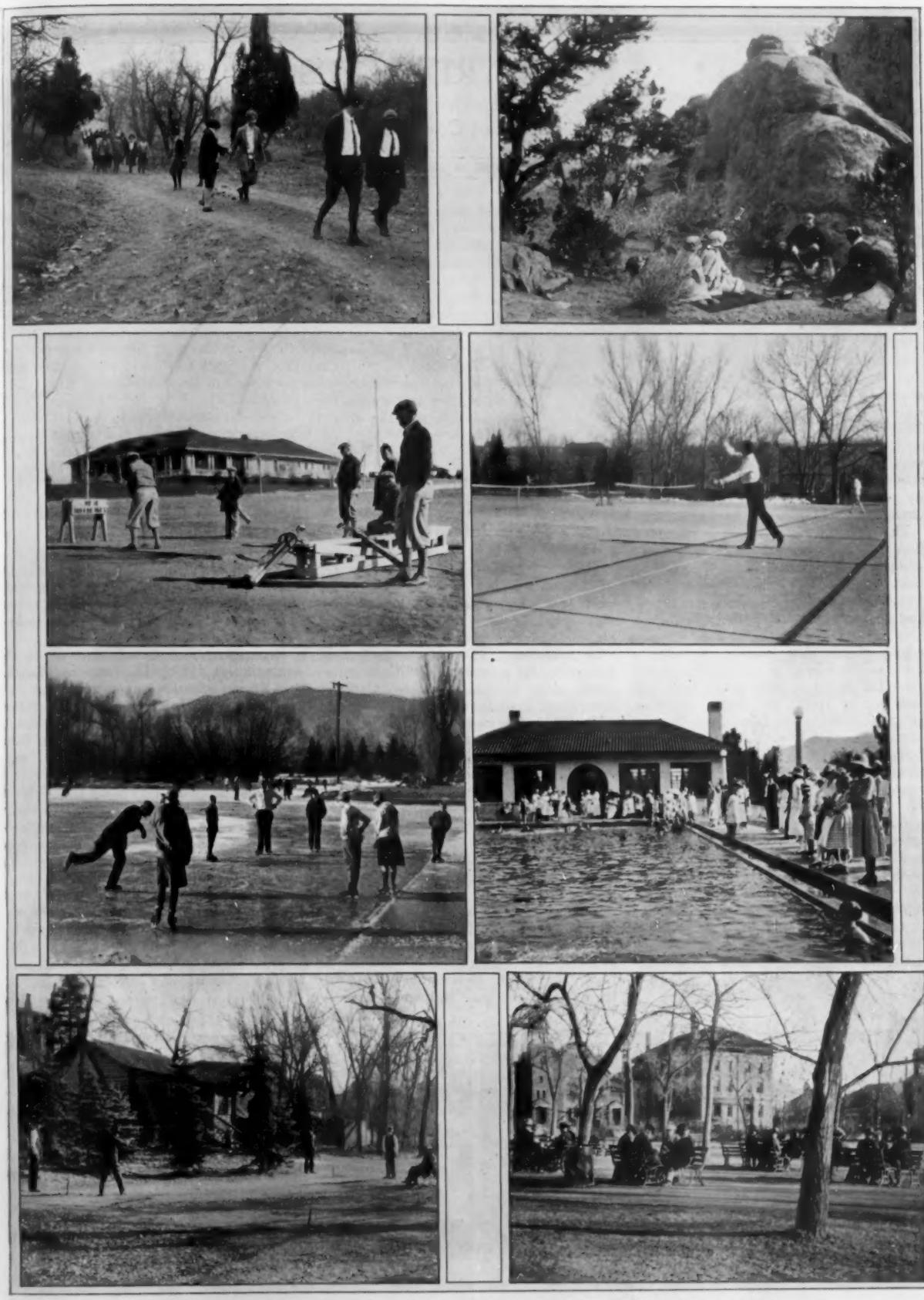
The acreage of recreation areas is 2,525.22. Of this amount, 2,269.78 acres are in the four extra-urban mountain units, and 255.44 acres in the eleven units which are well distributed over the city.

Public recreation features are municipal golf, recreation pavilion, municipal plunge, water surfaces for boating, large batteries of concrete-surfaced tennis courts, playing fields for major sports, municipal band with 26 pieces, miles of bridle-trails, miles of hiking trails, high line two-way road for motoring, numerous city and mountain picnicking areas with outdoor cookers and play facilities, flat-floor auditorium for indoor sports and recreative arts, Little Theatre, adult recreation center for quiet games, and 16 well-equipped school and park playgrounds.

The recreation program includes sports leagues and tournaments in golf, baseball, soccer, winter sports, tennis, bowling on the green and horseshoe pitching; quiet games, story-telling and dramatics, music and handwork at the park and school playgrounds; band concerts with community singing; large assistance in the community festivals on the great days; and aid to sports and recreative arts groups through an adequate system of permit-letting for the use of facilities.

The attendance at various recreation program features which the city provided was considerably upwards of one million last year.

While there is ample evidence that all cities do not desire to administer public recreation activities in the same way, the last Year Book of the Playground and Recreation Association of America showing 197 cities with playground and recreation commissions, departments, divisions, boards or bureaus, 127 cities with direction of service by park boards, commissions, departments and bureaus, and 124 cities with direction by school boards, Colorado Springs administers its recreation program through a legally constituted Park Board, which has a Playground Committee with W. W. Postlethwaite, Treasurer of Colorado College, as Chairman. Facilities and program are administered by G. V. Hennenhofer, Superintendent of Parks, and Miss Cecilia Gormley, Supervisor of Playgrounds and Recreation Activities. The staff also includes a goodly number of directors of special features such as golf, music, city-wide sports, tennis, aquatics and playground activities.



VARIED FEATURES OF THE PUBLIC RECREATION SERVICE OF COLORADO SPRINGS

From left to right, down the page: Colorado Springs girls on a hike through Bear Creek Canyon; a picnic party in the Garden of the Gods; on the municipal golf course; municipal tennis courts, Monument Valley Park, where concrete surfacing makes year-round play possible; skating in Monument Valley Park, followed by a view of the municipal swimming pool and one of a contest in horseshoe pitching in the same Park; the last picture shows card games and checkers in Acacia Park

FORWARD STEPS

Reported by

Municipal Officials, Chamber of Commerce Executives, and Others

Chamber of Commerce and High Schools Cooperate in "Know Your Home Town" Mass Meeting

EAST ORANGE, N. J.—The Chamber of Commerce of the Oranges and Maplewood on February 15 staged an unusual community undertaking in the form of a mass meeting of citizens of the five municipalities, East Orange, West Orange, Orange, South Orange and Maplewood, which are under its jurisdiction. The meeting was convened under the slogan title of "Know Your Home Town," its purpose being to acquaint the residents more thoroughly with the attractive features of the separate units composing the five-municipality community, and in effect to sell the Oranges and Maplewood to its people.

The program was arranged in collaboration with the superintendents of the four school systems operating in the community. A high school student from each system was selected on the basis of his public-speaking ability, and under the direction of the respective faculties of the school system each student prepared a thesis on the subject of the meeting, developing the theme on independent lines, and each setting forth the history, progress, social, cultural, economical and physical advantages of his own community. In combination with the speaking program, a musical entertainment was provided by means of a massed orchestra formed from the high school orchestras of the four systems and representing a total of 107 instruments. This combined orchestra spent several weeks in rehearsals separately, and had two combined rehearsals prior to the entertainment. The opening number of the musical program was conducted by Captain Philip Egner, Musical Director of the West Point Military Band, and the remainder of the program was under the direction, in rotation, of the music supervisors of the four high schools.

Twelve hundred persons attended the meeting. The boys who delivered the addresses made a splendid impression with their clearness of presentation, logic of construction, and persuasiveness of arguments. The 107-piece orchestra aroused the audience to the highest pitch of enthusiasm, and showed extraordinary skill and responsiveness to the careful training of their instructors. The effect on the community as a whole has been most stimulating, and a much greater interest in the social and economic assets of the municipalities has been a direct result.

A. EDMUND WILLIAMSON,
Executive Secretary, Chamber of Commerce of the Oranges and Maplewood.

Canton Plans to Repeat Last Year's Home Improvement Contest

CANTON, OHIO.—The Canton Chamber of Commerce has under consideration plans for its second annual home improvement contest; and indications are that an affair of this kind will be held each year hereafter. The first contest, held last year, was primarily for the improvement and beautification of Canton's homes and front lawns. Prizes, valued at over $300 and including $200 in cash, were contributed by interested business firms and individuals.

The contest opened in the spring and closed on September 15. Winners were selected on the basis of the greatest improvement shown during the period of the contest. Judges selected them by comparison of photographs taken of each contesting home and lawn at the opening and at the close of the event.

In addition to the actual contest, a meeting honoring all the contestants was staged. At this meeting prizes were awarded the winners. Hon. Martin L. Davey, nationally known tree expert, was the principal speaker. He used as his subject, "Trees and Shrubbery—Their Value and Care." A musical program and a talk by Mayor S. M. Swarts of Canton were other features of the meeting, which the audience enjoyed from beginning to end.

Interest and enthusiasm among all contestants marked the entire event. Many who had not entered, noting what others were doing along the line of home beautification, began making improvements, and the results of the contest were widely noticeable. The City Beautification Committee of the Chamber of Commerce, composed of both men and women, sponsored and staged the contest.

DANIEL L. HOSTETLER,
Assistant Manager, Chamber of Commerce.

Small Cities Combine in Utility Rate Controversy

LORAIN, OHIO.—As a result of the gas rate controversy affecting several smaller cities and villages in Ohio, a permanent league is being urged in several of them to bargain collectively with utility companies in rate matters.

Recently, about twenty-five of these communities, led by the cities of Marion and Elyria, joined together to employ expert engineering and appraisal talent for the purpose of collecting data to be used in a rate controversy with the Logan Gas Co. before the State Public Utilities Commission.

The gas company is bending every effort to have the municipalities negotiate their rate agreement separately, and by delays and a so-called compromise ordinance has succeeded in wresting Elyria and Newark from the coalition.

Lorain, Elyria's northern neighbor, had been previously invited by the latter's officials to join in the fight and share in the expense, but staid out. Neither did it pass a rate ordinance, apparently preferring to await, and take advantage of, the results of the "other fellows'" fight.

PRIZE WINNER IN CANTON'S FIRST ANNUAL HOME IMPROVEMENT CONTEST, PHOTOGRAPHED WHEN THE COMPETITION OPENED AND AT ITS CLOSE

WINNER OF THE $25 FIRST PRIZE IN BUFFALO'S FIRST BACKYARD PLAYGROUND CONTEST
It is the playplace of the three Smith children of 183 Lemon Street and their friends

Thereupon the company offered Lorain its "Elyria compromise," December 19, 1927, proposing a reduction for the first two years of a four-year rate-schedule, amounting to about 25 cents monthly to the average household consuming 5,000 cubic feet per month, but an increase of about 35 cents in the third year and of about 65 cents in the fourth, as compared with the present schedule.

A minority in the Lorain City Council vigorously objected to its passage, on the ground that the present rate is itself a subject of controversy before the State Commission and has been collected for three years by the company under bond to return the surplus to consumers in case the Commission finally fixes a lower rate, and that to adopt the compromise would automatically absolve the company from paying back to Lorain consumers any such possible surplus.

The then Mayor of the city, whose term expired January 1, 1928, urged a scientific survey covering the company's property valuation, the cost of producing natural gas and coke-oven gas (manufactured as a by-product by the steel company located in Lorain), the practicability of basing rates on the thermal or heat-producing unit instead of the cubic foot or volume unit, and the feasibility of municipal distribution of either artificial or natural gas, or both.

He contrasted the public utility corporations, commanding the "services of the most gifted attorneys, the most efficient engineers, the ablest financiers and accountants, the shrewdest lobbyists and politicians . . . their ability to utilize, through years of experience, these various high-grade talents in an effective combination to achieve the results they are after" with "the municipal corporation of Lorain served by a different administration every two years, its consequent changes of policy, new adjustments, new experience to be acquired, etc." He argued further that "it costs money to get these facts, which only a large city or a league of smaller ones can properly finance."

The company, with the plea of making great concessions below what it was legally entitled to, in order to "buy peace," prevailed, however, the vote being 5 to 4. The Mayor vetoed the ordinance.

The new Council, which is overwhelmingly of opposite party to the outgoing Mayor, unanimously concurred in the veto at its first meeting. At the following meeting the new City Solicitor was instructed by a vote of 5 to 3 to join the protesting cities in their rate fight before the Commission at Columbus.

P. I. T.

A Second Annual Backyard Playground Contest

BUFFALO, N. Y.—Public playgrounds in this city are few and are usually at such a distance from the average home that many wise parents do not allow their children to attend them except on special occasions. Rapid transportation monopolizes the streets. With frequent casualties caused by the play of children on the streets, city dwellers face the question: *Where can a small child play?*

This is certainly a home problem.

The Buffalo City Planning Association, Inc., attempted last summer to indicate a solution of this important problem by inaugurating a back-yard playground contest and using every means at its disposal to direct parents' and children's attention to the possibilities of using their back yards for playgrounds. It issued in quantity an attractive leaflet, pointing out that children should have a chance to compete with the ash-cans and clothes-posts which too often monopolize back yards. This leaflet also gave detailed dimensions for pieces of home-made play apparatus by means of which a back-yard desert can be changed into a play oasis, supplying health and fun for a whole family. Plans suggesting especially good layouts for a back-yard playground were included.

Through this leaflet, posters, speakers, and publicity in newspapers with city-wide and neighborhood circulation, the details of the contest and its cash prizes were broadcasted. This resulted in 135 families entering their back yards in the Buffalo City Planning Association's contest.

The time of judging came with several hundred children eagerly awaiting the momentous event. The preliminary judging extended over three days, each judge selecting the three best back yards in the district assigned to him. All judges then took part in the final inspection of the best playgrounds in each district.

Opportunities for play were in abundance, but of varying degrees. Some children were provided with sand-box, swings, trapeze, slide, playhouse and toys of all sorts. One child, with a meager workbench fashioned by himself, improvised his few playthings. Chief among them was a set of golf flags used on a 8 x 10 rectangle of mud surface. Children played handball against a garage, treasured a cement drive as a place to roller-skate, evolved a basket-ball goal from a peach basket with the bottom knocked out, or even made a barrel-hoop serve this purpose. While a few parents discounted all efforts made by the child to create a "play-place," most parents shared their children's enthusiasms and efforts.

Prizes were awarded to the twelve playgrounds which were entered in the finals. These varied from $25 to $2 and were designed as a stimulus to those who entered the contest and to those who may enter it in succeeding years. Indeed, the Association considers that its campaign has but begun and, further, that the awarding of the prizes is the least important feature of the contest. The prizes were awarded, yes, to a fraction of the number competing; but the results cannot be measured by such a measuring rod. The spirit of planning for children's play has begun to develop in Buffalo. Plans for the 1928 contest are now well under way.

BUFFALO CITY PLANNING ASSOCIATION.

Asbury Park Has New $215,000 Athletic Field and Stadium

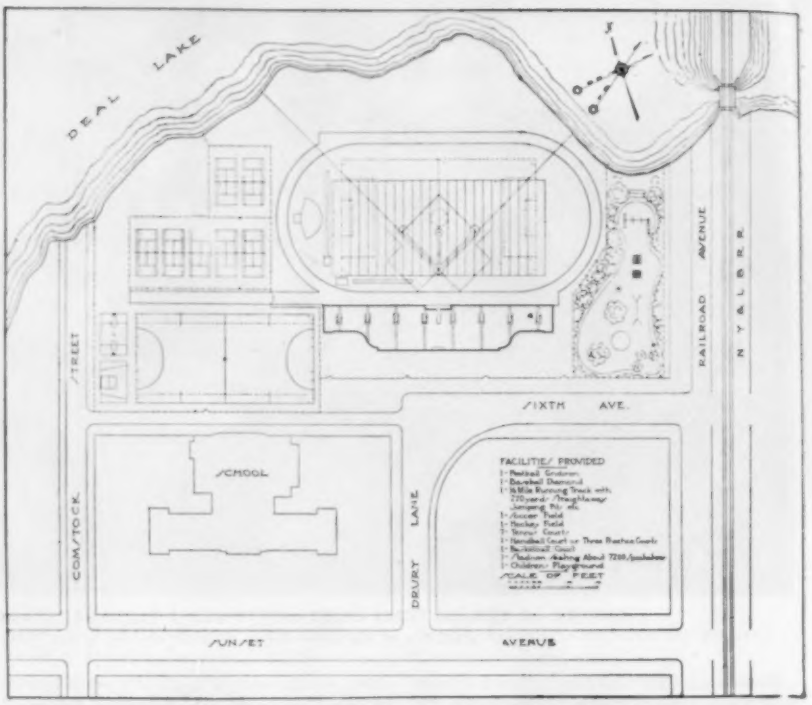
ASBURY PARK, N. J.—A municipal stadium was built here last year, and opened for use in October. It is used for the athletic games of the schoolboys and others, and also for any outdoor gatherings of Asbury Park residents and visitors.

In 1926, the Board of Education completed a fine new High School in the northern part of the city, designed by its capable architect, E. A. Arend. The athletic grounds adjoining the school, beautifully located on the shores of Deal Lake, had for years past been used for a bicycle track and for baseball, football, etc. When it was generally decided to develop this property, the services of Gavin Hadden, civil engineer, of New York, were engaged. Mr. Hadden has had wide experience in stadium and athletic field design, and, after studying the wishes of the City Commissioners and the School Board, he laid out a scheme for general development and designed a stadium which met with the approval of all. The stadium was built under contract by J. R. Taylor and Co., of this city, who did an excellent piece of work.

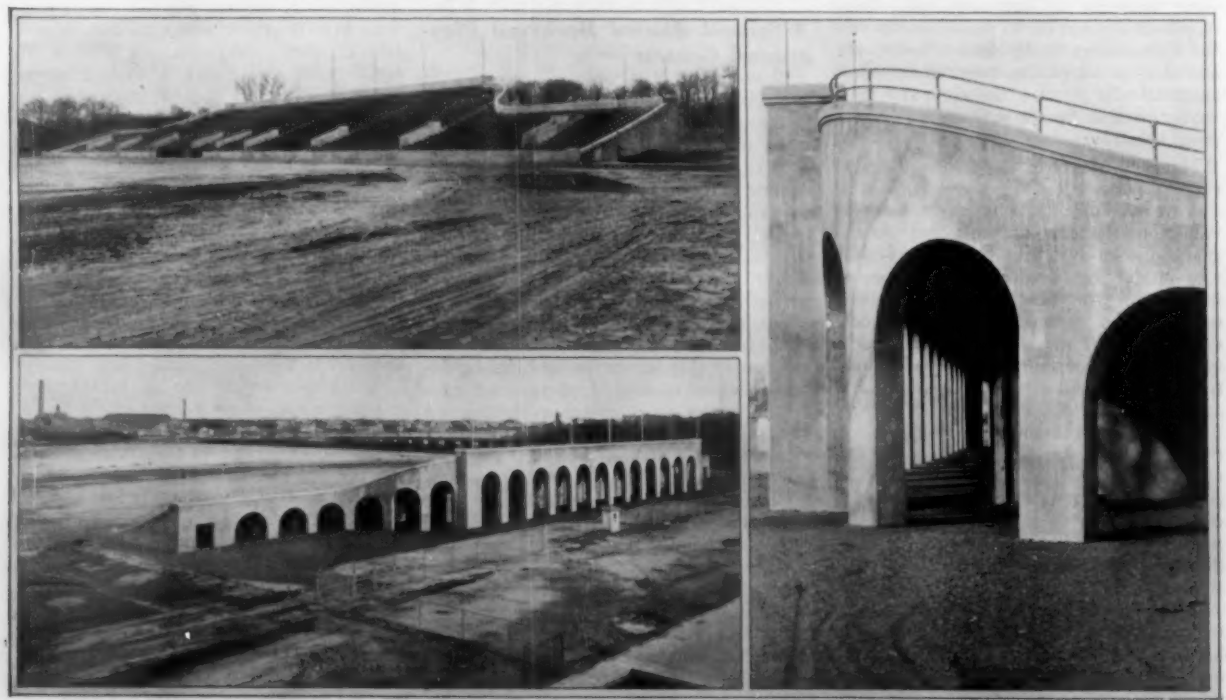
In addition to the stadium, the athletic plant, as planned and as substantially completed, includes a football field, a baseball diamond, a quarter-mile cinder running-track with 220-yard straightaway, runways and jumping-pits for field events, a soccer field, a hockey field for girls, seven clay tennis courts, an outdoor handball court, an outdoor basketball court, and a playground for small children.

The stadium, built mainly of reinforced concrete, seats about 7,200 spectators and is located on the side of the field adjoining the straightaway. Its design follows the most modern principles in its general lines and in its construction, seats, etc., as well as in its arrangement for the circulation of both players and public without interference with each other. The seats are so placed as to provide the greatest number where most people prefer to sit, and the curves of the rear wall give the stadium an interest and distinction of its own. The arched openings in this wall, with the public concourse just inside, present many interesting glimpses and vistas, some of which are indicated in the illustrations shown herewith.

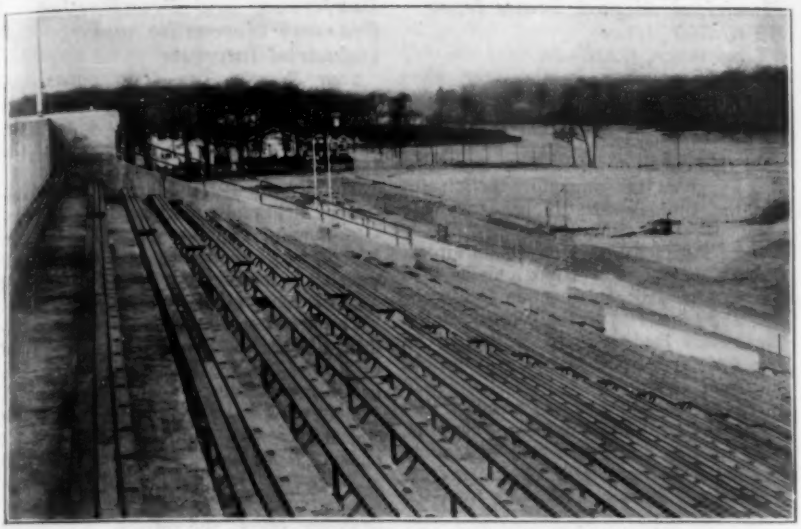
Under the stadium, public toilets, storage rooms and two complete suites of rooms for home and visiting teams have been built. Each suite includes locker-room, shower-room, toweling-room and toilet-room, and is directly connected with the field by a passage entirely separated from the public passages.



LAYOUT OF THE ASBURY PARK ATHLETIC FIELD, SHOWING THE LOCATION OF THE STADIUM AND ITS RELATION TO THE OTHER RECREATIONAL FACILITIES AS WELL AS TO THE SCHOOL



TWO VIEWS SHOWING THE FRONT AND REAR OF THE ASBURY PARK STADIUM AND A CLOSE-UP OF THE ENTRANCE ARCADE, THE ARRANGEMENT OF WHICH GIVES EASY ACCESSS TO ALL SEATING SECTIONS



A SECTION OF END SEATS OF THE ASBURY PARK STADIUM

The grounds are completely enclosed, by the lake shore on one side and elsewhere by chain-link fences, with ample entrance and exit gates and ticket-handling facilities. The whole development is believed to be as up-to-date, neat and effective as can be found in any community at the present time. The complete cost of the construction was $150,000, and the cost of the land, $65,000. This brings the cost of the high school building and grounds up to $215,000.

CLARENCE E. F. HETRICK,
Mayor.

EDITORIAL NOTE.—Of particular interest to the municipality with large stadium requirements and small present financial ability, is the Dyche stadium at Northwestern University, which was also planned by Mr. Hadden, and which includes features of design as unique as those in the Asbury Park stadium. The first unit of this structure, completed in 1927, affords a seating capacity of 35,000. Additions planned for the early future will bring this up to 50,000, while the completed structure, according to the plans, will seat 75,000. The two-deck, 50,000 capacity building, meanwhile, will present a pleasing and finished appearance. (See page 171 of the March issue of THE AMERICAN CITY.)

Municipal Street Cars Carry Daily Announcements of Local Events

CORAL GABLES, FLA.—This city owns and operates its own transportation line, with the exception of one trolley extension from Miami, owned by the city of Coral Gables but operated under contract by the Miami Beach Railway Company, a subsidiary of the Florida Power and Light Co. Coral Gables is tied in with the heart of downtown Miami by means of a rapid-transit, high-speed interurban line, which operates on a 20-minute schedule between the very centers of the business districts of both cities. These cars are 52-passenger, de luxe type, and painted the distinctive Coral Gables color.

The service is so convenient that many residents of Coral Gables drive or are driven to its principal stop, park their cars, ride the rapid transit into Miami, attend to their shopping and return to their cars, thus avoiding the difficulties of downtown parking.

For experimental purposes, the writer has placed on the front of these cars dashboards announcing events in Coral Gables. Changes for these boards are furnished daily by the Chamber of Commerce to the Transportation Department.

The board shown in the accompanying illustration has a bronze waterproof case with plate-glass front. The whole is rigidly attached to the dash of the car. Since this photograph was made, we have illuminated these boards with small reflected lights. This illumination of the front of the car acts as a safety device and materially decreases the liability to traffic accidents.

The public reaction has been most favorable, particularly in a tourist city, as is Miami. People now watch with interest the daily change in announcements.

Coral Gables Transportation System well serves the various sections of this model community, with branches running through the Riviera section down to its southern extremity on Sunset Road. Another branch operates over the principal east and west artery, Bird Road, out to the new railway station of the Seaboard Air Line. The rapid-transit lines are supplemented and fed by bus loops operating throughout the most thickly populated residential areas and connecting with every car to and from Miami.

In its first year of operation the system carried 1,513,351 passengers. During 1927 it carried 2,100,546 passengers; and the number carried so far this year shows a tremendous increase over 1927.

R. M. DAVIDSON,
City Manager.

A County Civic Program

THE recently organized Bergen County Chamber of Commerce, with headquarters at Hackensack, N. J., of which former Senator Edmund W. Wakelee has been elected President, and J. W. Binder, Secretary-Treasurer, has announced a program largely civic, including:

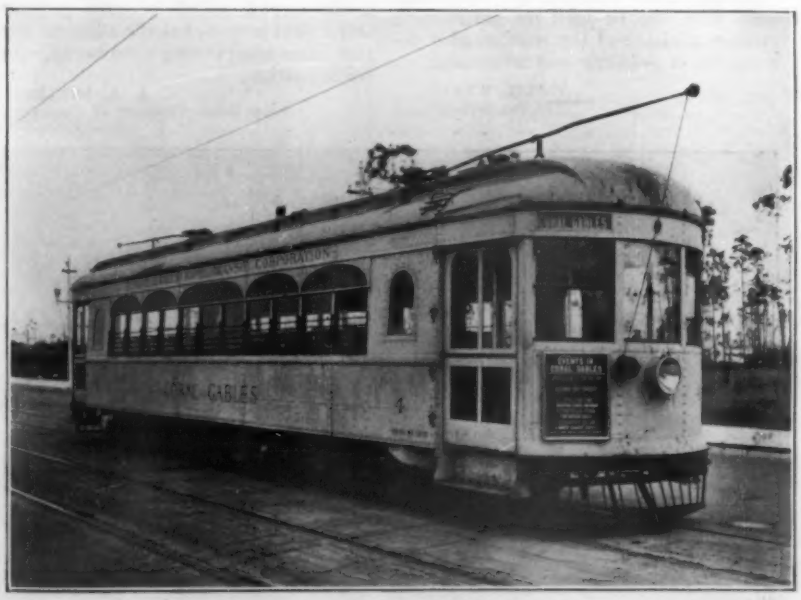
1. Adequate highways, built now
2. An electrified system of rapid transit
3. A carefully planned trunk sewer system
4. A Bergen County airport
5. Parks—properly located and planned
6. Consolidation of municipalities
7. A County Planning Commission
8. Reclamation of the Meadows

The opening of the Holland Tunnel and the construction of the Hudson River bridge make such a program of special importance.

A Municipal Advertising Program Under California's New Law

SAN DIEGO, CALIF.—Less than a year has elapsed since the passage by the State Legislature of the municipal advertising and publicity bill, but already California cities have appropriated more than $1,000,000 to broadcast their particular charms and advantages through magazines and newspapers of the nation, according to a recent survey.

The law permits each city to appropriate by ordinance annually a maximum of 5 cents on each $100 assessed valuation



ONE OF THE MUNICIPAL INTERURBAN STREET-CARS IN CORAL GABLES, FLA., WITH BULLETIN BOARD ON THE FRONT

for publicity and advertising purposes. Of the various communities, Los Angeles City and County leads the list, having already set aside $500,000 to finance a national advertising campaign. San Francisco is second, with a $140,000 fund.

Take San Diego as a typical example of how the new law operates. Although the city may spend $93,000 at its present assessed valuation, the Councilmen have set aside only $10,000 in the fund, preferring to hold up the full amount until the experiment of municipal "self-praise" can be tested out. Entire control of the city's advertising and publicity has been placed in a board composed of Mayor Harry Clark, Councilman Frank Seifert, and City Clerk Allen Wright. Each advertisement is handled through the various departments in much the same manner as a regular requisition, Mr. Wright said. In this way it is subject to the various checks by the city auditor, auditing committee, etc. A copy of the advertisement is attached to the requisition when it is filed.

The variety of San Diego's attractions is evidenced by the business publications, national in scope, which are included in this year's advertising schedule. Among these are magazines published in the interest of aviation, motor boating, harbor craft, naval activities, and commercial organization interests. *The Los Angeles Greeter's Guide*, a magazine distributed on incoming trains, is allotted a small appropriation to reach tourists, and the Mission Play program is allowed a small insertion stressing San Diego's relationship with the early California days.

According to City Clerk Wright, the city's advertising will reach a guaranteed circulation of about 1,835,000 subscribers. In addition to the magazine schedule, advertising is also inserted in the annual editions of the local press. The advertisements are prepared by the San Diego California Club, an organization doing community advertising for several years.

According to a recent ruling by City Attorney James O'Keefe, the advertising fund may also be used for entertaining visiting officials and the creation of a department of publicity and advertising.

VIRGIL WYATT,
The San Diego *Sun*.

Municipal Airport Grows from 80 to 365 Acres

LONG BEACH, CALIF.—As there are only about fifteen days in the year when climatic conditions are not suitable for flying here, Long Beach is exceptionally adapted to year-round flying. It is probably this condition more than any other that has given this community the impetus for the rapid strides it has taken in aeronautical activities.

Long Beach has maintained an airport since 1921, and now claims a flying field first in area and equipment in California, and third in area in the United States. The actual landing space consists of an area 6,190 feet by 2,900 feet, with no obstructions at either end.

The present site was first set aside in 1924 out of the city-owned water-bearing land, with an area of 80 acres. It is situated just north of Signal Hill, 4½ miles from the business district and 3 miles from the ocean, and is served by the Union Pacific Railroad and paved highways along three sides connecting with the central business sections and Long Beach-Los Angeles Harbor. There are 365 acres now available, with a slight slope, affording the best of natural drainage, and entirely graded, leveled and rolled. Signal Hill to the south, rising several hundred feet above the surrounding terrain, acts as a beacon for the field, while the surrounding level acreage stretching to the north, east and west, and the lack of wire or other obstructions, gives flyers a comforting assurance in landing and taking off.

Construction is now under way for a Naval Air Reserve Base to serve as a training field for navy flyers in Southern California. The field is well marked with sock, circle and landing tees; obstruction lights are installed on hangars and other buildings and near the boundaries, and the entire area is literally turned into day by giant floodlights to aid night flying. An 8,000,000-candle-power revolving beacon guides night flyers safely to the field, being visible from 20 to 50 miles. Not only is the airport suited for mail, passenger and freight service, but the adjacent territory offers ideal factory sites for appropriate industries.

A. A. MILLER,
Long Beach Chamber of Commerce.

THE MUNICIPAL AIRPORT IN LONG BEACH, CALIF.

Conference and Broadcasting Promote Mercantile and Industrial Interests

FORT WAYNE, IND.—Two outstanding activities recently initiated by the Fort Wayne Chamber of Commerce were the Better Merchandising Conference, and the Industrial Comission's programs.

The two-day Better Merchandising Conference, held under auspices of the Wholesale Bureau, Chamber of Commerce, in March, was attended by over a thousand merchants representing a trade radius of about seventy miles.

The first-day program opened by an address of welcome by our Mayor, followed by a brief talk by the undersigned on the better merchandising conference idea. A symposium on "Planning Your Business Ahead" featured addresses by a Detroit banker, a prominent credit manager, and a representative of the United States Chamber of Commerce on matters of financing, credit, and buying. Practically the whole business sessions of the second day were devoted to better business suggestions. Speakers from a number of the outstanding mercantile establishments of the country discussed such questions as store equipment and layout, advertising, window display, and the training of employees. Both days' programs were distinguished by addresses on service in business. There was an address by a prominent Fort Wayne minister on "The Merchant as a Citizen." There was adequate opportunity throughout for questions from the floor. The conference was enlivened by social and entertainment features, including a banquet and an "evening of fun" in which prominent place was given to a humorous playlet.

The merchants were very enthusiastic, and have already requested that the Conference be repeated next year, feeling that the complete program was practical.

Our radio broadcasting programs, initiated in March by the Industrial Commission, given from WOWO (Watch Our Wonderful Opportunities) station, will continue into June, and will be started again in September. These are given on Thursday evenings weekly from 9 to 10 Central Time (10 to 11 E. T.) and feature the industrial advantages of Fort Wayne, including its power costs, excellent labor conditions, transportation facilities, good markets, and raw materials. The writer does all of the broadcasting, including announcing, after being introduced by the regular radio announcer. Before and after each entertainment number, we bring in a reference to the products of the particular concern whose night it is. In the middle of the program there is a five-minute talk of a narrative character, half of which is devoted to the industry and half to the industrial and commercial advantages of Fort Wayne. The manufacturer featured on the particular evening pays $100 for the hour, hence the whole program is practically financed outside our own industrial funds. WOWO is Indiana's most powerful station, and one of the 19 most powerful in America on low wave length, its programs having been heard in Europe.

J. B. WILES,
Manager and Industrial Commissioner, Chamber of Commerce.

A Working Course in Community Civics in New York is Productive of Far-Reaching Effects

NEW YORK.—Thousands of students from civics classes of the high schools and junior high schools of New York City are enlisted during every school term in an active campaign for keeping the streets clean. Through cooperation of the Anti-Litter Bureau of the Merchants' Association of New York with the schools, the students are enrolled as block captains, and are provided with credentials and with blanks on which they make monthly reports through the civics teachers to the Association.

The Anti-Litter Bureau promptly forwards complaints shown on these reports (a fac-simile of which is reproduced herewith) to the various city departments under whose jurisdiction the reported violations fall. These are asked to investigate, take necessary action and report to the Association. The block captains' reports are graded by the Association and are accredited by the teachers as class work.

The far-reaching effects of the work may be judged by the results accomplished during the first term of the present school year: An enrollment of 6,242 block captains from nearly 40 high schools in Manhattan, the Bronx, and Brooklyn, made reports resulting in the correction of approximately 56,000 cases of street litter. Block captains, themselves, corrected more than 48,000 litter conditions, while of the serious violations reported to the Association and by it to the Police Department, more than 1,100 were corrected.

—W. S. MCGRANE, Manager, Anti-Litter Bureau, The Merchants' Association of New York.

GREETING

The Merchants' Association of New York

HENRY CUNNINGHAM

For Meritorious Services Rendered

The City of New York

as Block Captain of

The Anti-Litter Bureau

of The Merchants' Association of New York

New York, February—June, 1928.

CARD OF COMMENDATION FOR BLOCK WORK

Revolving Elevated Lights Distinguish Fire Apparatus

DAYTON, OHIO.—For many years, in fact ever since general motorization of fire-fighting apparatus, there has been an urgent need for some method by which the public could quickly distinguish and unmistakably identify pieces of fire department equipment responding to night alarms.

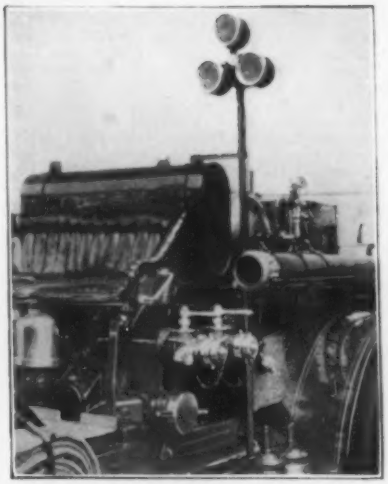
With the rapid increase of automobile and truck traffic, this need has become a real necessity. It is no longer merely a problem for the city departments, but for the village and county departments as well, for the automobile and truck driver is a constant hazard for the fire department.

We have adopted the Roto-Rays device of the Buckeye Iron & Brass Works of this city, because it is so very spectacular that it quickly attracts general attention, there being three revolving lights mounted on our apparatus on 6-foot standards, which places them 8 to 10 feet above the street level, making them plainly visible over the tops of automobiles.

Our main traffic control tower is located in the center of the congested district, where companies responding to downtown boxes frequently intersect each other's paths. Traffic officers in charge of this and other busy intersections now experience no difficulty whatever in determining the exact location of pieces of fire apparatus that may happen to be running in different directions, for even before the warning signals can be heard, the revolving lights signify both location and direction of progress.

One of the most valuable features of the signal is its ability to attract the attention of traffic moving in the same direction. The movement of the light is plainly visible through the rear window of an automobile, and quickly attracts the attention of the driver in his windshield mirror. Since the new signals were installed we have not had a single accident at night that involved a piece of apparatus in the Division of Fire.

FRANK B. RAMBY,
Chief, Dayton Fire Department.



REVOLVING LIGHTS MOUNTED ON DAYTON OHIO, FIRE-TRUCK

THE MERCHANTS' ASSOCIATION OF NEW YORK
233 Broadway
Telephone: Whitehall 7000

Block Captain's Monthly Report

Hand This Report to Your Civics Teacher on the 1st or 15th of Each Month for Manhattan or Bronx and Brooklyn Schools, Respectively

REPORT for Month of ..... 192..

Name .....

Address ..... *Borough* .....

High School or Annex .....

Civics Teacher ..... *Civics Class No.* .....

For the block comprising ..... from ..... to .....

I have spoken to ..... violators for sweeping, throwing or burning refuse in streets, yards or lots.
I have spoken to ..... violators for uncovered, insufficient or improper garbage cans.
I have spoken to ..... violators for overfilled ash cans or untied or unpacked litter.
I have spoken to ..... violators for placing cans or bundles on curb line.
I have spoken to ..... violators for expectorating on sidewalk or in public conveyances.
I have spoken to ..... violators for unsanitary condition of streets, yards or lots.
I have spoken to ..... violators for tardy or non-removal of snow or ice from sidewalk or gutter.

WRITE IN DETAIL A REPORT OF YOUR ACTIVITIES AS BLOCK CAPTAIN DURING THE PAST MONTH.
KINDLY ADVISE WHETHER CONDITIONS PREVIOUSLY REPORTED HAVE OR HAVE NOT BEEN CORRECTED.

BLANK FOR RECORDING COMPLAINTS MADE BY BLOCK CAPTAIN, SHOWING UNSANITARY CONDITIONS NOTED

Officials from 38 Communities Represented at Crookston's "Municipalities Day"

CROOKSTON, MINN.—In anticipation of the annual Red River Valley Winter Shows, this year, the following invitation was sent to public officials of the 104 municipalities of the valley:

"The city of Crookston invites your attendance, as an official of your municipality, to be present at The Northwestern Minnesota Red River Valley Municipalities Day, to be held at Crookston on Thursday, February 9. This is the first effort to be made to bring the municipalities of this section of the state together to study their common problems. A most interesting and valuable program has been arranged, a copy of which is enclosed. The cooperation of the League of Minnesota Municipalities has made the event possible.

"The morning will be given over to an inspection of the Red River Valley Winter Shows, which has grown to be one of the most remarkable agricultural winter fairs in the United States. The afternoon will be used for the presentation of the special reports and addresses on municipal problems by well-known authorities of the state. The evening will offer an opportunity of hearing Governor Christianson address an opening meeting on the problems which face the state of Minnesota. . . .

"We believe that every municipality should send at least one official delegate, which could well be afforded as a public expense. Your trip will be profitable to your municipality and enjoyable to yourself. Come and make this a real Northwestern Minnesota achievement."

One hundred and twenty officials from 38 municipalities accepted the invitation to Municipalities Day, the afternoon session of which included six addresses, as follows:

"Tax Rates in Cities and Villages," by J. G. Armson, Chairman, Department of Taxation of Minnesota.

"A Balanced Health Program," by Dr. T. J. Ferriera, County Health Officer, St. Louis County.

"What Highways Mean to the Small Town," by C. M. Babcock, Commissioner of Highways.

"Freight Rate Adjustment and Its Effect on the Northwestern Minnesota Red River Valley," by J. C. Kelly, Secretary of Crookston Association.

"The Significance of Municipal Cooperation," by Dr. R. R. Price, Director, General Extension Division, University of Minnesota.

"Services of the League of Minnesota Municipalities," by Harvey Walker, Executive Secretary, League of Minnesota Municipalities.

The meeting was a much greater success than we had anticipated for a first attempt, and at its close a resolution was passed asking for a similar conference next year at the time of the Winter Shows.

A sectional meeting of this kind is of great value to the State League of Municipalities because, as in this instance, it led to the immediate desire on the part of some of the smaller towns to join the state organization. Such a meeting also permits many representatives of the smaller towns to discuss municipal problems—an opportunity which they would otherwise never have, because of their inability to attend a state meeting. We believe that we have accomplished a new service both for the smaller municipalities and for the State League of Municipalities.

O. E. LOCKEN, Mayor.

Flint's Progress Presented Pictorially

FLINT, MICH.— Flint's annual progress report in graphic form was issued in February, as usual, by the Chamber of Commerce. This report is designed as a résumé of the city's expansion and an index to the various attractions which it holds forth as a center for new industries. Cumulatively, the series forms a history of Flint's having gained and kept place as Michigan's second city industrially, and third in matter of population.

Notable among the statistics shown are those of building permits issued and the number of single-family houses actually erected in 1927 as compared with 1926 (which was a record-breaking year in these activities), and with 1925. These particular figures represent one of the human interest phases of a city's industrial expansion, the matter of proper housing for the thousands of new workers being brought in through the expansion of the automobile industries having received particular attention through the Chamber of Commerce Citizens' Committee on Home and Civic Development. And they, as well as most of the other figures, are given an additional significance when examined in connection with the excellent city plan which was made by John Nolen and Bion J. Arnold in 1919. Flint's growth since that time has been a matter of orderly development along the well-defined lines laid down on the plan, and outlined in THE AMERICAN CITY for May, 1927, page 678, in connection with which the last year's pictorial record was shown.

C. W. OTTO,
Manager, Flint Chamber of Commerce.

EDITORIAL NOTE.—The present graphic record shows notable industrial expansion and physical growth along the orderly lines indicated by Flint's city plan when compared with the 1926 report. It shows an even more striking gain in effectiveness of appeal and in the art of using graphs as a means of vitalizing masses of otherwise tedious statistical data, although the former was noteworthy in its excellence.

See "How to Judge a Municipal Report" (page 149 of this issue), valuable also in chamber of commerce report making.

Socially Minded Mayor Promotes Community Recreation Programs

MOUNT STERLING, OHIO.—This community enjoys some exceptional public recreational facilities, including a village band, although it has a population of only 1,045. It owes this band, as it owes numerous of its other distinctive attributes, to the fact that it has three times elected Courtney M. Neff as its mayor. (He began his third term on January 1 of this year.)

It was during his last term that Mayor Neff officially turned over for use of the band a small, centrally located park. This and the bandstand which he ordered erected, have made possible band concerts at least once a week in good weather, and have otherwise increased the interest in community music. Interest in the concerts has spread even outside the village, and the band is frequently in demand in nearby towns and cities, where it acts as an excellent advertiser for Mt. Sterling.

Among other recreational facilities which are exceptionally organized are the Mt. Sterling Horseshoe Pitchers' and Croquet Clubs, which are held in awe by all comers. The courts are located on land donated for the purpose by Mayor Neff, equipped by him, and given to the clubs, rent free. Further evidence of the Mayor's enthusiasm for public recreation is attested by the fact that he owns a fine tract of land on Deer Creek, two miles north of the village. This is known throughout the state as a beauty-spot of rare charm, and is a favorite resort of people from many counties of central Ohio. Free camping privileges are given annually to all Boy Scout, Girl Scout and Campfire Girl groups by the Mayor, who prides himself as much upon the model layout of his rec-

A GRAPHIC RECORD OF FLINT'S EXPANSION IN VARIOUS DIRECTIONS

THE NEW MUNICIPAL OFFICE BUILDING IN BALTIMCRE

reation park as upon his philosophy in dealing with the younger set. While believing in a rigid enforcement of the law in dealing with hardened offenders, he has a theory that "kid crooks" are a result of too much hothouse training, and often need only free outdoor life, organized recreation, and the incentive to go straight.

He is an active backer of baseball and, although not in favor of Sunday games, abides gracefully by the law that permits them and sees that they are conducted on the right lines. He opens the season, officially, for the home team, and provides a police officer for each game. The result is that no trouble has occurred because of Sunday baseball.

The Mayor is a real fan for the home town high school athletic teams, too,—baseball, football, basketball, and track,—and follows the teams on all trips. He has aided in providing proper equipment for the school gymnasium, athletic field and playground, personally opening a campaign for funds for these purposes a year or so ago, and "keeping at 'em," in his own phraseology, until the suits literally fell upon the youngsters and the playground appliances dropped onto the playing fields.

One of Mayor Neff's first acts after his last election was to order a complete inventory of the village, such as he would have had taken of a business organization when assuming office as its administrative head. The findings of such a survey might not be vital to the conduct of municipal affairs; nobody might be permanently profited by knowing the number of automobiles, or radios—or lapdogs—owned by the combined citizenship of the village. But then, the Mayor astutely observed, it is humanly interesting to have such information. It affords a check-up on recreational and cultural facilities—and standards—and last, but not least, it serves to change the conversation for a little while from the Remus and Hickman type of headlines.

A. K. CHENOWETH.

Baltimore's Municipal Departments Assume Occupancy of Magnificent New "Overflow" Building

BALTIMORE, MD.—This city's new Municipal Office Building, planned by the Department of Efficiency and Economy to relieve the overcrowded condition of City Hall, has been completed at a cost of $1,485,000, and is now occupied by the bureaus and departments it was designed to house.

The building is an imposing and beautiful addition to the city's architecture. While strikingly modern in conception and in the contours of its mighty masses, it shows a definitely classic influence in detail treatment. Although designed as a subsidiary building to the City Hall, the structure received the most careful attention, not only in the matter of its own architecture, but with respect to the future development of City Hall Plaza and the buildings to be erected there. A sub-committee, including the architect, made the study and recommendations which were adopted, involving a total expenditure of $2,000,000.

The structure has an exterior facing of Indiana limestone which conforms in texture and tone with City Hall and the War Memorial. In its adapted classic design it follows the general scheme already decided upon for future buildings to be placed in the Civic Center. The interior, fittingly almost devoid of ornamental effects, has massive rows of pilasters along the first floor, the stone walls of which are patterned off into large rectangular effect, and the heavy beams and girders of which are in keeping with the chaste design of the exterior.

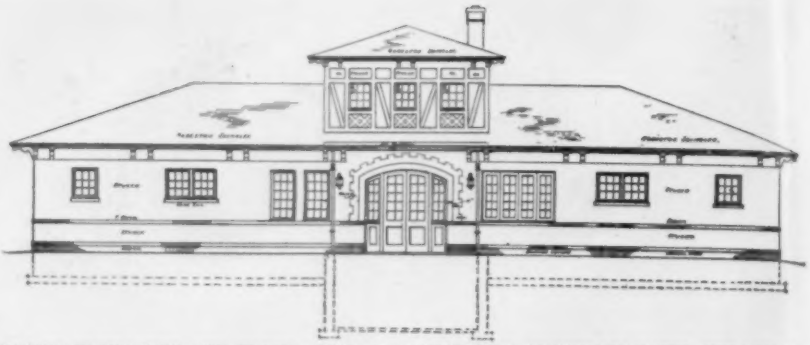
The floors in the principal parts of the first story are of Tennessee marble tile, the wainscoting of imported block marble; the elevator doors and other accessories are of statuary bronze; the woodwork is of rich walnut. William H. Emory, Jr., is the architect, and the J. Henry Miller Company the builders.

BALTIMORE MUNICIPAL JOURNAL.

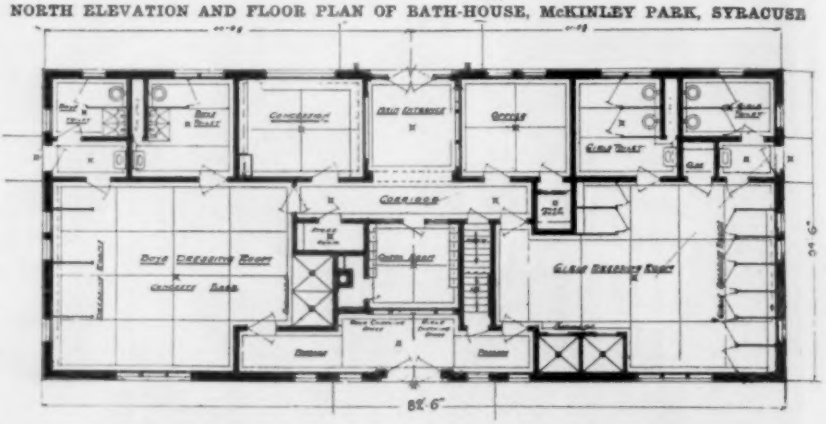
Playground and Swimming Pool Occupy Site of Old Brick-Yard and Pond

SYRACUSE, N. Y.—McKinley Playground with its splendid, up-to-date new swimming pool, is an excellent example of the conversion of an unsightly piece of property into a serviceable community recreation center. This property, in the midst of a built-up residential district, was formerly a brick-yard and a pond, and served a limited number of neighborhood boys as a playfield. It was unrestricted in use, and generally considered unhealthful and unsafe. In fact, it is recorded that one boy lost his life in swimming there.

The city purchased the entire property at a cost of approximately $31,000. A slight amount of grading, and filling consisting of 18,000 cubic yards of dirt secured by contract with some additional city and private waste dirt, eliminated the dangerous condition and established a tentative playground. Subsequently, considerable study and time were given to the development of an ideal playground to meet the recreation needs of the immediate community. The initial development began with the construction of the first battery of four tennis courts and a baseball field; next, the swimming pool was built, and finally the bath-house, as shown in the accompanying chart.



NORTH ELEVATION AND FLOOR PLAN OF BATH-HOUSE, McKINLEY PARK, SYRACUSE



The swimming pool of reinforced concrete is 75 by 150 feet. It contains three-quarters of a million gallons, ranging in depth from 3 feet to 6½ feet, and will accommodate comfortably 300 swimmers at one time. The water is changed and the pool cleaned once a week, while a constant supply of fresh water is maintained daily.

In the construction of the pool, exclusive of sidewalks, 440 cubic yards of concrete and 11,000 pounds of steel reinforcing were used. A chain link fence 8 feet high encloses the entire pool and forces the public to enter through the bath-house, thereby ensuring complete supervision. As special features may be mentioned the ladders, which are countersunk in the sidewalls of the pool; a scum gutter; and a special electric booster pump used to drain the bottom of the pool, which lies somewhat below the sewer outlet.

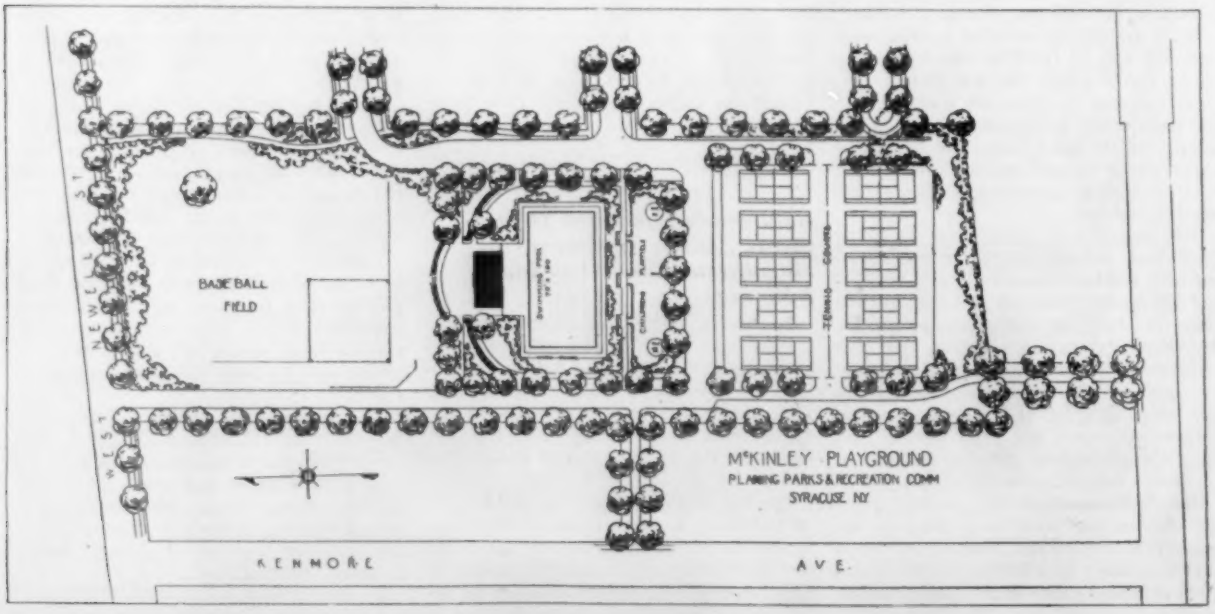
The bath-house is approximately 36½ by 80 feet and contains, besides the dressing-rooms, showers, check-room and toilets, a caretaker's apartment on the second floor, and a small basement which houses the heating boiler and the water heater. This building is constructed of terra cotta tile, covered with stucco and trimmed with brick. The floors are of concrete and the roof covered with asbestos shingles. The plan was studied to give the maximum amount of control and supervision, and at the same time efficiency and convenience in handling the crowds.

The following figures, covering the cost of the building, may be of interest:

General contract	$16,895
Heating contract	1,852
Electrical contract	482
Plumbing contract	3,545
Total	$22,754

Syracuse is justly proud of its eleven splendidly supervised swimming pools, and I believe ranks well in comparison with our larger cities.

CLARENCE E. HOWARD, Consultant, Planning, Parks, and Recreation Commission.



WESTWARD ON MAIN STREET, ROCHESTER, SHOWING NEW LIGHTING STANDARDS

LOOKING EAST ON MAIN STREET, ROCHESTER, AT THE NEW LIGHTS

Lighting of Main Business Streets Increased Fourfold

ROCHESTER, N. Y.—A new lighting system has been installed on East Avenue and on Main Street, East and West, in this city, consisting of steel standards of special design, with two lamps each. The lamps are of the inverted luminous magnetite-arc 6.6-ampere type and have an intensity of 1,500 cp. They are on series circuits of 70 lamps each. The illumination is equivalent to a system utilizing single lamps spaced 25 feet apart in a single row, and give a striking example of ample "Great White Way" lighting, providing Rochester with one of the best-lighted main thoroughfares to be found. There is four times as much illumination furnished by the new system as by the single lamps and standards replaced. The installation was made by the Rochester Gas & Electric Corporation, and includes special transformers and other equipment at the substation.

V. B. WILSON,
Publicity Director, Chamber of Commerce.

How to Judge a Municipal Report

ONE of the most effective proofs of excellent municipal work may be the printed report which tells about it; but the report may be—and too often is—absolutely futile as evidence of work that actually has been well done. There is a technique to be attained in the making of municipal reports—a training that holds fascination for an intelligent mind. Standards in report-making have been formulated in the statement of twenty points given by Clarence E. Ridley, of the National Institute of Public Administration, in his article on "Appraising Public Reports," in the March issue of the *National Municipal Review*. This article follows reviews of twelve municipal reports, given in the magazine since June, 1927. The points are as follows:

I. DATE OF PUBLICATION

1. *Promptness.*—The report will have little value unless published soon after the end of the period covered—six weeks as a maximum.

II. PHYSICAL MAKEUP

2. *Size.*—Convenient for reading and filing, preferably 6" x 9".

3. *Paper and type.*—Paper should be of a grade and the type of such size and character as to be easily read.

4. *Important facts.*—The more important facts should be emphasized by the use of different types of artistic presentation.

5. *Attractiveness.*—The cover, title, introduction, and general appearance should aim to attract the reader and encourage further examination.

III. CONTENT

A. *Illustrative Material*

6. *Diagrams and charts.*—Certain established rules should be followed to insure an accurate and effective presentation.

7. *Maps and pictures.*—A few well-chosen maps to indicate certain improvements, and a liberal supply of pictures, pertinent to the report, should be included.

8. *Distribution.*—Great care should be exercised in placing the illustrative material contiguous to the relevant reading material.

B. *Composition.*

9. *Table of contents.*—A short table of contents in the front of the report is a great aid for ready reference.

10. *Organization chart.*—An organisation chart or table indicating services rendered by each unit, if placed in front of report, will help the reader to a clearer understanding of what follows.

11. *Letter of transmittal.*—A short letter of transmittal followed by summary of outstanding accomplishments and recommendations for the future should come early in the report.

12. *Recommendations and accomplishment.*—A comparison of past recommendations with the progress toward their execution will serve as an index to the year's accomplishment.

13. *Length.*—Fifty pages should be the maximum length.

14. *Literary style.*—The text should be clear and concise, reflecting proper attention to grammar, sentence structure, and diction.

15. *Arrangement.*—The report of the various governmental units should correlate with the organization structure, or follow some other logical arrangement.

16. *Balanced content.*—The material should show a complete picture, and each activity should occupy space in proportion to its relative importance.

17. *Statistics.*—Certain statistics must be included, but, wherever appropriate, they should be supplemented by simple diagrams or charts.

18. *Comparative data.*—The present year's accomplishments should be compared with those of previous years, but only with full consideration of all factors involved.

19. *Financial statements.*—Three or four financial statements should be included showing amount expended and the means of financing each function and organization unit.

20. *Propaganda.*—It is unethical and poor taste to include material for departmental or personal aggrandizement. Photographs of officials, especially of administrators, do not belong in a public report.

This interesting work of report appraisal will be continued by Mr. Ridley in future issues of the *National Municipal Review* (261 Broadway, New York), which will be glad to receive duplicate copies of reports from cities, counties, and local units as soon as they are available for distribution.

Success mostly comes from calm and prudent planning.—Thucydides.

Membership Councils—A New Development in Chamber of Commerce Organization

By A. V. SNELL
MANAGER, PITTSBURGH CHAMBER OF COMMERCE

THE Councils of the Pittsburgh Chamber of Commerce represent 16 trade and professional groups, whose some 1,100 members are progressively furthering their interests and that of the city through the medium of the Chamber. The purposes of the Councils are analogous. Alert to their own needs, these groups act as promotional agencies and, being specialists, are truly aggressive councilors of the Chamber. Individual members of the Chamber have this means of becoming an active part of the organization. The Councils, then, may be said to exemplify a "democratic" Chamber organization, giving as much voice in affairs to concerns having only one member as to companies having a number of memberships.

Now, relatively small groups can become integral parts of the Chamber, as the petition of but ten members is necessary for the Board of Directors to authorize a charter for the formation of a Council. Petitions are being made from time to time, and other Council groups are now in process of formation.

Trade Group Interests

The relationship of the Councils to the Chamber is a new form of chamber of commerce organization. Elsewhere such groups are usually known as bureaus and operate, in a large degree, separately from the chamber. The work which bureaus of the old type do is largely individualistic and is limited by the aims and purposes of the group itself. For example, a Merchants' Bureau carries out a program of activities relating primarily to the needs of retailers themselves. The Councils of the Pittsburgh Chamber, on the other hand, can do such work as is ordinarily done by a bureau and, further, are authorized to make recommendations to the Chamber on any subject they may desire. Many of these are of direct interest not only to the Council group initiating the recommendation, but to the Chamber of Commerce or the city as a whole.

The value of this added field of operation of the Councils can readily be seen. In this manner support of the entire Chamber can be secured by a Council in furthering an activity in which it may be either directly or indirectly interested, as provided by the by-laws of the Chamber, by submitting its request for authorization to proceed to the Board for its approval. Hence, the Chamber of Commerce joins with the group in endeavoring to complete the project in question.

Advantages of the Councils Idea

Naturally, with the 16 Councils and 38 standing Committees of the Pittsburgh Chamber of Commerce laying out programs of work, and with the interrelation of activities, Councils and Committees may have common interests in a given subject, *but without conflict*. First, the Councils are all represented by their chairmen on a committee known as the Council Organization Committee, along with other appointed members of the Chamber. Here the work of all the Councils is summarized. Each Council Chairman is acquainted with the activities of every other Council, and matters of common interest to all are made a part of the program of these committee meetings. Many suggestions of interest to all the Councils emanate at these meetings, and the Councils' common problems are discussed. A recommendation to the Chamber of Commerce from this Committee, therefore, is an expression from all the Councils.

Second, by making known to each Council the nature of matters referred to Committees by the President, the Councils become acquainted with the subjects under discussion in each of these Committees, thus eliminating the duplication of effort which might otherwise exist. Any Council interested in matters so referred may request that it be given a hearing by the Committee before the Committee takes definite action. Committees welcome the views of the Council groups, as they are given an opportunity of learning the opinion of specialists on pertinent subjects by conferring with the appropriate Council. Also, the Chamber of Commerce membership, in passing upon reports so made have the added assurance that a group which may be especially interested has voiced its opinion for the consideration of the Committees in making its report. In all cases where Councils make recommendations which are referred to Committees, the Council is invited to have representatives meet with that Committee to discuss the subject. Hence, the Councils, in reality, also act as counsellors to the regular Chamber Committees.

This organized relationship between Councils and Committees gives an opportunity for all interested members of the Chamber to take part in Committee discussions leading to recommendations before they are submitted to the membership. In many cases, subjects for report are referred directly to Councils by the President, and in such matters the Councils act as Chamber standing committees.

All Chamber Members Eligible to Council Membership

The only requisite for a Council membership is membership in the Chamber of Commerce. No Council dues are assessed. Requests for appropriations are made to the Executive Committee of the Chamber, as is done by all Committees. In many instances, though, funds are raised by Councils to carry out specific programs. These funds may be forthcoming from the Council members themselves or from the business interests of the city, as the situation may warrant or as authority may be granted. In other words, the work of the Councils is carried out in the same manner as that of Committees in so far as needed financing is concerned.

The Chamber's sixteen Councils are virtually beehives of activity. Two of these, the Retailers Council and the Radio Council, meet weekly; the Printers semi-monthly, and all the others—the Architects, Automotive, Builders, Building and Loan, Dairy Products, Engineers, Fire and Casualty, Foreign Trade, Fruit and Produce, Life Underwriters, Paint and Varnish, Shippers and Wholesalers Councils—meet monthly, which shows marked interest in the fields in which they have been organized. Through their efforts Pittsburgh has been, and will continue to be, benefited in many ways.

A summary of Council activities appeared in a recent program of a Good Fellowship Dinner given by the Councils, copies of which may be had upon request. These activities are visible evidence of the Councils' accomplishments and show the impetus of their efforts. In a comparatively short time progress has been made in completing definite projects in each group. Many others are contemplated and are being given due consideration. All the Councils have definite programs for future development.

Inter-Relation, Councils and Divisions

From time to time some of the Councils have been made an auxiliary part of other divisions of the Chamber as supplementary to the field of work of these divisions. They round out the needed organization which carries through the work for which they are logically fitted. The Shippers Council functions with the Traffic Division; the Dairy Products and Fruit and Produce Councils with the Natural Resources Division; The Wholesalers and Foreign Trade Councils are adjuncts of the Commerce Division; and the Architects, Life Underwriters, and Fire and Casualty Councils are a part of the Community Affairs Division, in so far as their work is being handled. The names of these Councils imply relationship to the Division in which they have been placed, and their work is dovetailed with the standing Committees.

There is still another feature of Council meetings well worthy of mention and that is the opportunity thus afforded to men in similar lines of business to meet together periodically, to actually "rub shoulders" with competitors, friends and fellow civic workers. Many helpful suggestions have been the result of congenial round-table discussions. Such meetings are typical of the Councils—and agreeably enlightening.

Undoubtedly, every business man wishes to be known personally in his field of endeavor, and he wants to know others. The opportunity is most conveniently afforded by association with groups whose members have a common interest. The Councils of the Chamber of Commerce of Pittsburgh are just such an instrumentality. They afford an opportunity, heretofore lacking, for all members of the Chamber to render service for self and city.

The Veterans' List—Alphabetically Arranged

Present Chamber of Commerce Secretaries Who Have Been Engaged in This Field of Work for Ten Years or More

THE Organization Service Bureau of the Chamber of Commerce of the United States has compiled a list of 130 secretaries of civic-commercial organizations who have seen ten years or more of service in the chamber of commerce field. As issued, the list is divided into three groups: those who have had over 25 years of service (2 names); those who have had from 16 to 25 years of service (42 names); and those who have served from 10 to 15 years (86 names).

A rearrangement of the entire list in alphabetical order, showing years of chamber of commerce service, follows:

Name	Present Connection	Years of Service in C. of C. Work
A. H. Andrews	Portland, Maine, B. of T	16
L. Antles	Roseburg, Ore., C. of C	16
W. H. Arnett	Indiana State C. of C	13
F. D. E. Babcock	Bloomington, Ill., C. of C	15
H. B. Barth	East Liverpool, Ohio, C. of C	15
Roscoe B. Beal	Spartanburg, S. C., C. of C	14
P. N. Bernard	Kalispell, Mont., C. of C	16
E. D. Bevitt	Rome, N. Y., C. of C	12
Lee H. Bierce	Grand Rapids, Mich., A. of C	11
Naylor B. Biggs	Tiffin, Ohio, C. of C	12
W. W. Blain	Grand Forks, N. Dak., Com'l Club	17
H. E. Bodine	Reading, Pa., C. of C	17
Benj. H. Bonnar	Toledo, Ohio, C. of C	16
H. B. Branch	Raleigh, N. C., C. of C	15
Chas. H. Bren	Salina, Kans., C. of C	10
A. L. Burge	Port Arthur, Tex., C. of C	16
Leslie C. Bush	Muncie, Ind., C. of C	18
D. W. Case	Massillon, Ohio, C. of C	14
Daniel N. Casey	Harrisburg, Pa., C. of C	16
H. N. Clark	Meriden, Conn., C. of C	15
J. E. Clayton	Jackson, Tenn., C. of C	12
G. E. Collisson	Denver, Colo., C. of C	13
C. W. Craig	Paducah, Ky., B. of T	16
L. B. Crawford	Winfield, Kans., C. of C	13
W. C. Culkins	Cincinnati, Ohio, C. of C	17
E. A. Daley	Bellville, Ill., C. of C	15
A. B. Davis	Lubbock, Texas, C. of C	11
Charles H. Davis	Lansing, Mich., C. of C	14
Ray W. Davis	St. Joseph, Mich., C. of C	10
L. P. Dickie	Tampa, Fla., B. of T	16
W. D. B. Dodson	Portland, Ore., C. of C	15
A. S. Dudley	Sacramento, Calif., C. of C	14
John G. Duffy	Utica, N. Y., C. of C	11
Harrison Elliot	Bakersfield, Calif., Civic & Com'l A	10
E. J. Fellow	Elyria, Ohio, C. of C	12
F. M. Fewell	Rock Hill, S. C., C. of C	11
George Firmin	South Bend, Ind., C. of C	11
E. W. Fitzgerald	Olean, N. Y., C. of C	12
John J. Fitzgerald	Paterson, N. J., C. of C	19
James A. Ford	Spokane, Wash., C. of C	11
George E. Foss	Pennsylvania State C. of C	14
Fred L. Foster	San Jose, Calif., C. of C	13
G. Robert Galloway	Kewanee, Ill., C. of C	11
Raymond B. Gibbs	Scranton, Pa., C. of C	15
Harry W. Graham	Chillicothe, Mo., C. of C	13
P. A. Gray	Pueblo, Colo., Commerce Club	16
J. M. Guild	Kansas City, Mo., C. of C	22
Charles T. Gwynne	New York State C. of C	13
E. C. Hackett	Springfield, Mo., C. of C	14
Charles W. Haensel	Saginaw, Mich., B. of T	16
James G. Hammond	New London, Conn., C. of C	13
Munson Havens	Cleveland, Ohio, C. of C	23
F. Herr	Greenwood, Miss., C. of C	11
Geo. F. Hines	Haverhill, Mass., C. of C	10
Henry T. Hoag	Poughkeepsie, N. Y., C. of C	23
R. W. Holcombe	Steubenville, Ohio, C. of C	17
Wm. Holden	Tulsa, Okla., C. of C	10
Dan S. Hollenga	Petersburg, Va., C. of C	15
M. Hollingsworth	Phoenix, Ariz., C. of C	16
W. E. Holmes	Keokuk, Ia., C. of C	18
D. H. Howe	Jamestown, N. Y., C. of C	18
Warren Jackson	Biloxi, Miss., Coast Club	14
Richard C. Job	Elizabeth City, N. C., C. of C	10
J. Kennard Johnson	Binghamton, N. Y., C. of C	13
V. D. Johnson	Orange, Calif., C. of C	18
Charles J. Kellem	Chattanooga, Tenn., C. of C	17
N. B. Kelly	Philadelphia, Pa., C. of C	34
J. David Larson	Long Beach, Calif., C. of C	18
George F. Leingang	Sandusky, Ohio, C. of C	10
G. W. Lemon	Troy, N. Y., C. of C	14
W. I. Lewis	Staten Island, N. Y., C. of C	11
Walter O. Lochner	Trenton, N. J., C. of C	12
Edwin B. Lord	Jersey City, N. J., C. of C	13
Harry W. Luethi	Canton, Ohio, C. of C	10
Robert N. Lynch	San Francisco, Calif., C. of C	23
S. Chester Lyon	Pittsfield, Mass., C. of C	12
H. E. Mathews	Huntington, W. Va., C. of C	24
Fred S. McCargar	Salinas, Calif., C. of C	16
S. H. McClary	Monroe, La., C. of C	12
Milton McConnell	Fort Smith, Ark., C. of C	10
S. C. Mead	New York Merchants Association	21
Wm. L. Mead	Hartford, Conn., C. of C	13
Geo. C. Merkel	Alexandria, La., C. of C	12
W. S. Millener	Williamsport, Pa., C. of C	15
F. Roger Miller	Asheville, N. C., C. of C	20
Lester Milligan	Mason City, Ia., C. of C	10
W. B. Morey	Lancaster, Pa., C. of C	12
W. E. Morrow	Louisville, Ky., B. of T	16
J. E. Morton	Bellefontaine, Ohio, C. of C	12
Don E. Mowry	Madison, Wis., A. of C	14
Harry N. Nado	Greenwich, Conn., C. of C	11
J. U. Nichols	Gary, Ind., C. of C	12
John E. Northway	Hamilton, Ohio, C. of C	14
Frederick E. Norton	Syracuse, N. Y., C. of C	13
C. E. Noyes	Owosso, Mich., C. of C	12
James F. Preston	Alexandria, Va., C. of C	22
Thomas Purse	Savannah, Ga., B. of T	21
G. A. Raymer	Santa Ana, Calif., C. of C	12
Ralph D. Redfern	Rochester, N. H., C. of C	18
Charles E. Reid	Bronx, N. Y., B. of T	24
George E. Rix	Manchester, Conn., C. of C	16
C. M. Sarchet	Ponca City, Okla., C. of C	13
S. Valentine Saxby	Duluth, Minn., C. of C	13
Fred W. Seavey	Lynn, Mass., C. of C	10
C. H. Sexauer	Lancaster, Ohio, C. of C	15
M. T. Sharp	Corinth, Miss., C. of C	12
Claude Simpson	Roswell, N. Mex., C. of C	12
D. A. Skinner	C. of C. of the U. S	16
C. E. Smith	Newport, R. I., C. of C	11
Edward R. Smith	Oshkosh, Wis., C. of C	11
A. V. Snell	Pittsburgh, Pa., C. of C	18
Grace M. Sparkes	Prescott, Ariz., C. of C	13
Vincent S. Stevens	Akron, Ohio, C. of C	20
W. C. Sutter	Valparaiso, Ind., C. of C	11
G. D. Theleen	McKeesport, Pa., C. of C	11
R. E. Thomas	Idaho State C. of C	14
Chas. R. Thorburn	Watsonville, Calif., C. of C	15
H. M. Van Auken	Kansas City, Kans., C. of C	12
E. B. Walker	Fitchburg, Mass., C. of C	10
Earl S. Weber	Kalamazoo, Mich., C. of C	11
Harry Welch	Newport Beach, Calif., C. of C	18
George F. Wells	New Bedford, Mass., C. of C	11
H. A. Wheeling	Kissimee, Fla., C. of C	15
Walter S. Whitten	Lincoln, Nebr., C. of C	22
J. B. Wiles	Fort Wayne, Ind., C. of C	11
W. H. Wiley	Ballston Spa., N. Y., C. of C	13
Hayden Williams	Wilkes-Barre, Pa., C. of C	12
M. W. Williams	Meadville, Pa., C. of C	16
P. S. Williams	Minneapolis, Minn., Civic & Com. A	11
Roland B. Woodward	Rochester, N. Y., C. of C	19

Coldwell Model "L" motor lawn mower and roller with gang units attached

One man with this machine can mow and roll 10 acres a day on one gallon of gasoline

Dependability and Long Life

City officials and park superintendents make no secret of their preference for Coldwell Model "L". They know from long experience that it is the *one* power mower that is absolutely dependable. It maintains lawns in perfect condition and stands up faithfully through long, hard service.

Write for booklet, "Care of the Lawn"

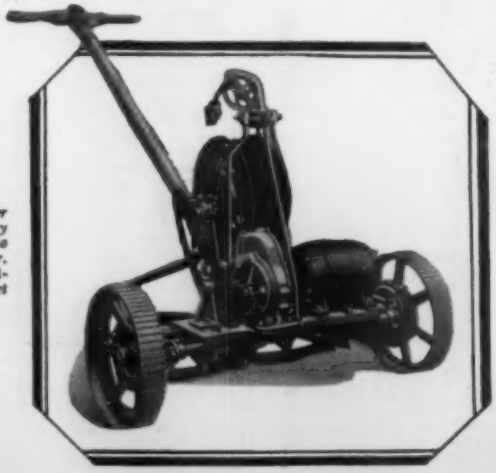
HAND — HORSE

COLDWELL

GASOLINE — ELECTRIC

DEPENDABLE LAWN MOWERS

COLDWELL LAWN MOWER COMPANY, NEWBURGH, N. Y., U. S. A.



At a new, low price!

Coldwell Electric Lawn Mower (at right) plugs in on any electric outlet. As easy to operate as a vacuum cleaner. Furnished in either 18- or 21-inch size. Send for booklet

Successful Bond Election Publicity

By JAMES E. SELLERS
CONSULTING ENGINEER, LOS ANGELES, CALIF.

WITH municipal and county taxes increasing each year, the problem of bond issues is becoming more serious in cities and counties throughout the United States.

About three out of every five bond elections fail to carry, because the majority of registered voters do not bother to vote. The apathy of the voting people is directly responsible for many hundreds of failures and for financial loss to the inhabitants of the city. This may sound like a contradictory statement, but in almost all cases when the bond issue for some needed improvement fails, the town or city itself is retarded in growth and the voters must pay in loss of business or in increased cost of doing business, or in higher accident-, illness- or death-rates, or in lack of modern educational or recreational facilities, or in some other way, for their failure to authorize the wise and liberal expenditure of municipal funds. In other words, the cost, direct and indirect, of a needed improvement which does not materialize is much greater than that of one which does.

Many communities are now over, or very close to, their bonding limits. To issue more bonds would be contrary both to law and to ability to pay. What is to be done? Many things can be done. The most advantageous, where legally possible, is to refund issues of long-time bonds for improvements that have long since passed the margin of utility, with short-time serial bonds, the redemption of which from year to year would gradually restore the city's borrowing capacity. In several cases investigated, the bond interest and redemption were being paid when the utility itself had ceased to function.

Next in importance comes the feasibility of the proposed improvement. Can the city afford to issue bonds for the specific purpose, or could the funds be more wisely spent for some other improvement? This question in any given case may be debatable. It depends upon many factors. The best method to adopt is not to consider each project by itself, but to study in a comprehensive way the city's needs over a five- or ten-year period, and to fit each improvement into a long-time planning and financial program.

Thorough Organization Essential for Carrying a Bond Issue Election

The question is often asked, when decision has been reached to submit a bond issue proposal to the voters: How can we put over this bond issue? There seems to be but one answer, namely: Organize correctly and thoroughly, and the issue will carry if it is a needed improvement.

Immediately following the announcement of the notice of intention, personal talks and addresses by leading citizens and authorities of the city and other nearby communities should be started in all civic organizations. It is inadvisable to adopt one set of speeches for the entire group of organizations; the program for speeches should be so arranged as to cover before each group the points vital to that group as well as to the city as a whole. Only speakers qualified to talk on the subject should be secured. Many bond issues have been lost because the speakers chosen were not the type to convince. This is a human problem and must be carefully considered by the committee in charge of the election publicity. Out-of-town speakers, with very few exceptions, convince a town audience much more readily than townsmen can.

Aid from the Newspapers

The newspapers can assist more than any other one medium, unless it is personal solicitation, which in most cases is out of the question. Newspaper articles should be released concurrently with the meetings held. This has a very good psychological effect upon the voters, especially those who may not attend the meetings, but who are otherwise vitally interested in the matter.

Newspaper advertisements should be released as the publicity campaign progresses. Care should be taken to see that no objectionable remarks are made in the advertisements, and considerable stress should be laid on comparisons with other communities. Start with smaller advertisements and increase the space, using larger type and fewer words. The last few advertisements should emphasize only the most vital points of the improvement.

Supplementing both the meetings and the newspaper publicity with a series of at least three pamphlets of four pages each, will assist materially in solidifying the minds of the voters. The pamphlets should be neatly printed on a good grade of paper and should tell a convincing story. Each issue should be of different color and should be numbered, and notice given that other copies have preceded or will follow. The method of issuing these in series tends to make the voter retain them at home until he has the complete series.

Ten Other Methods of Reaching the Voters

Other methods which have been found very profitable in getting the message to the voters include:

1. An essay contest among grammar and high school students.
2. Motion picture slides.
3. Handbills.
4. Billboard advertising.
5. Street banners.
6. Automobile stickers.
7. Window cards for stores and offices.
8. Rolls of printed tape for business firms.
9. Sidewalk stencils giving the date of election.
10. Balloons with inscription, "Vote Yes on Bonds."

These ten items should be included in every bond election publicity campaign. While some of those mentioned may not fit in with the general program, it has been found that when these ten are used, the results are much better than when only a portion of them are used.

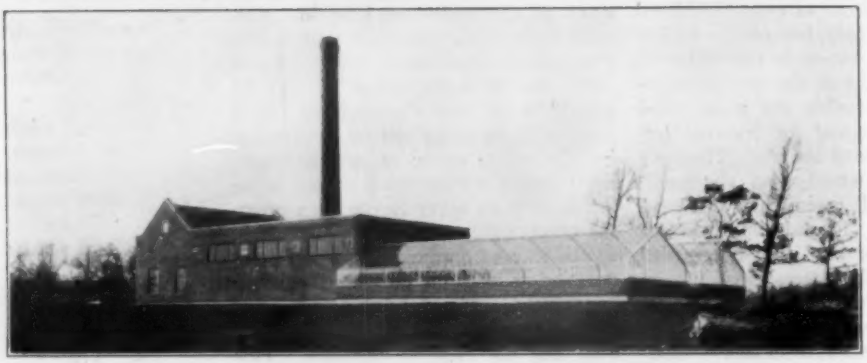
Bond campaigns should extend over a period of approximately thirty days. To go beyond this time causes the voters to lose interest. To attempt an educational campaign in less time does not permit of giving sufficient information to the voters.

When Election Day Comes

When all of the publicity has been released, on the day of the election, a "Voteogram" in the form of a printed message upon a reproduction of a telegram delivered to the door of each voter in a replica of a telegraph envelope will do much to call the attention of the voter to the time and place in which to vote. In addition to this, the method of having a corps of telephone girls call up doubtful voters during the entire day and offer the services of automobiles will increase the voting results fully one-third. The best time for rendering automobile service to voters in most communities is between 2:00 and 4:30 in the afternoon. The second-best time for securing women voters is between 9:30 and 11:00. Volunteer automobile service should be arranged for by a special automobile committee in advance of the election.

The writer will be glad to answer inquires from readers of THE AMERICAN CITY as to additional details regarding any of the methods suggested in the foregoing outline.

Master Construction Glass-Overs for Sludge Beds



Sewage Treatment Plant, Village of Larchmont, N. Y.
Nicholas Hill, Jr., Eng.

No Reason at All Why Sludge Beds Can't Be Attractive

THE fact of the matter is, municipalities are more and more demanding they shall be attractive.

Take this one at Larchmont, N. Y. The service structure is a fine brick one. The Glass-Over is our Master Construction having curved eaves, instead of the usual straight angle ones.

The foundation is of brick, in keeping with the building it joins.

You'll readily admit that the time is largely past, when just because the subject is sewage, the disposal plants can be indifferently designed and constructed.

That's where our 75 years of experience in building glass structures will be found of value.

Furthermore, the fact of our having built more Glass-Overs than all the others combined is not without its weight, wouldn't you say?

"All right," you reply, "but what have you to back up such a statement?"
All the proof in the world. Want it?

Lord & Burnham Co.

Sludge Bed Glass-Overs

30 East 42nd St. New York | Continental Bank Bldg. Chicago | Harbor Com. Bldg. Toronto

Branch Offices: Boston, Philadelphia, Irvington, Denver, Kansas City, Cleveland, Buffalo, Greensboro, St. Louis, Montreal, St. Catharines.

Garbage Collection and Disposal in Los Angeles

By R. W. STEWART

CHIEF DEPUTY, ENGINEERING DEPARTMENT, BOARD OF PUBLIC WORKS, CITY OF LOS ANGELES

ON the financial budget of every large city, garbage collection and disposal appears as one of the major items. If we investigate garbage handling in various cities we find diversity in the methods employed and unreasonable variation in the expense borne by the public for handling its garbage.

For example, some cities, after their garbage is collected and brought to a central point, incur additional heavy expense for its disposal. In other cities, after garbage is collected and brought to a central point, it is sold for a substantial price. Figures published in the 1926 Municipal Index indicate a profit to some cities of more than $1 per ton for garbage disposal and in other cities an expense of over $3 per ton. The difference between good and bad management in garbage disposal in a city of 500,000 people can readily amount to $1,000 per day. This sum of money would go a long way towards financing parks, play-

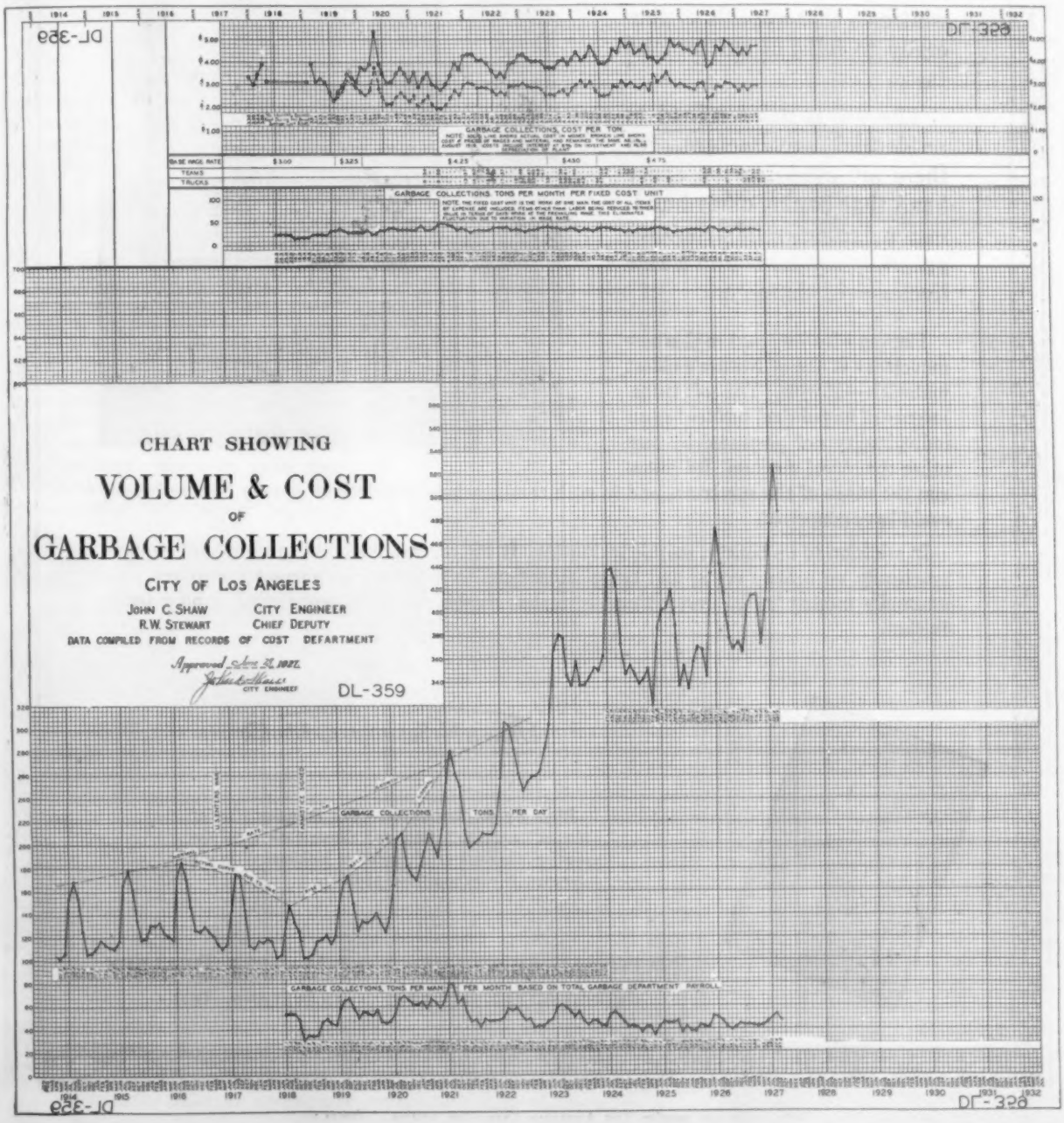


CHART SHOWING
VOLUME & COST
OF
GARBAGE COLLECTIONS
CITY OF LOS ANGELES
JOHN C. SHAW CITY ENGINEER
R.W. STEWART CHIEF DEPUTY
DATA COMPILED FROM RECORDS OF COST DEPARTMENT
DL-359
GARBAGE COLLECTIONS, COST PER TON
GARBAGE COLLECTIONS TONS PER MONTH PER FIXED COST UNIT
GARBAGE COLLECTIONS TONS PER DAY
GARBAGE COLLECTIONS, TONS PER MAN HOUR PER MONTH, BASED ON TOTAL GARBAGE DEPARTMENT PAYROLL

Character in Color

BRILLIANT color distinguishes modern interior decorations. There is a dynamic attractiveness about striking color harmonies and contrasts that appeals so generally to folks of culture and taste.

The use is not confined to residential architecture, for there are evidences on every hand that banks, office buildings and commercial structures generally are taking on a new liveliness of character.

Playing a leading part in this new movement is one of Nature's oldest materials—Marble. The soft translucence of its polished surface has an individuality not possessed by any other structural medium. Its colors run the range of the spectrum, and in such combinations and designs as only Nature herself could have conceived.

In addition to its beauty, marble is durable. It will outlast the building itself, and requires practically no upkeep costs; and being impervious to moisture, is inherently sanitary. An unusually modest initial cost ultimately makes marble the most economical of all interior finishes.

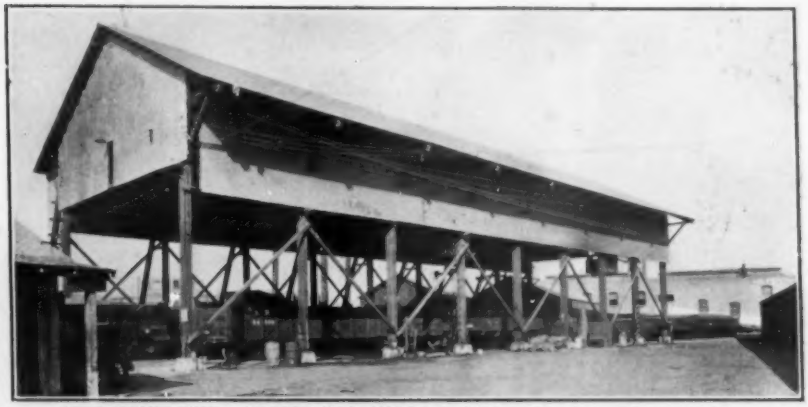
There is No Substitute for Marble

Write for the free booklet, "The Everyday Uses of Marble," containing facts and illustrations about the practical applications of marble in buildings of varied character. Write Department 11-D.

NATIONAL ASSOCIATION *of* MARBLE DEALERS
ROCKEFELLER BUILDING · CLEVELAND · OHIO

grounds and other civic activities.

In order to recover as much value as possible from the sale of its garbage, the city of Los Angeles has developed the following methods of collection and disposal:



THE CRANE SHED AT THE LOS ANGELES GARBAGE LOADING STATION

Preparation for Collection

An ordinance defines garbage as the refuse which results from the preparation and consumption of human food, and property owners are required to place their table garbage in garbage cans from which other refuse is excluded. No special fees for garbage collection service are paid, the entire expense being met by general taxation. Collection service is given only at places where meals are served, this practice conforming to the definition of garbage. The collection is done by city employees paid by the day and with city-owned equipment.

When it is noticed that a householder is misusing his garbage can by placing substances other than garbage in it, the collector declines to empty it, and the householder must then remove the foreign substance and hold it over until the next collection day, as the ordinance regulating garbage collection makes it a misdemeanor to dispose of garbage in any manner other than to set it out for the city's collector. A reasonable percentage of paper food wrappers is allowed in the garbage can.

Property owners are required to set out their cans for collection on the morning of collection day (or the evening before) in the alley, if there is an alley, or at the front of the property if there is no alley. Collectors are not allowed to delay their vehicle by going back after cans which were not set out until after the householder saw or heard the garbage wagon pass. Cans must be metal, water-tight, of from 3 to 16 gallons in capacity, and must have covers and outside handles. Collectors are privileged to decline to handle pails which do not conform to these requirements.

Collection

Collection is given twice a week in the residential districts and every night in the congested district. Both mule-drawn and motorized equipment is used, and careful studies have been made of their relative cost and performance. The mule-drawn units are operated by one man, who walks beside the wagon while collecting. The mules after a little experience learn the garbage-collecting trade and go from pail to pail with very little supervision. Once in a while there is a bill to pay because the garbage wagon hits an automobile, but this does not occur nearly as often as might be expected.

A motor-truck unit consists of a 2½-ton truck operated by three men. Both the trucks and the wagons are equipped with the same size detachable steel tanks, all tanks being interchangeable. These tanks hold 4.47 cubic yards level full and carry an average net load of about 5,000 pounds of garbage. The maximum net weight of a load of garbage during the melon season, when it is heaviest, exceeds 7,000 pounds. With the motor trucks it is necessary to have the driver on the trucks continuously, and in order to keep the truck moving rapidly two more men, one on each side, are used for pick-up.

UNLOADING GARBAGE COLLECTION TRUCKS INTO CARS WITH CRANE, AT LOS ANGELES

Relative Costs of Collection

It costs $8 per day to operate a one-man horse-drawn unit, and $23 per day to operate a three-man truck unit, making the operating cost of the truck 2.87 times as great as the operating cost of the team. The average speed of the team to and from work is 3.52 miles per hour, and the average speed of the truck to and from work is 9.64 miles per hour, which is 2.75 times as fast as the team. In picking up garbage the one-man team units average 85 pick-ups per hour, and the three-men truck units average 148 pick-ups per hour, which is 1.75 times as much as the team. To summarize: The truck unit costs to operate about 2.87 times as much as the team unit, depreciation and interest being included in both cases. It picks up garbage 1.75 times as fast and travels 2.75 times as fast. This shows that for any ordinary route within its cruising radius a team operated by one man is more economical than a truck operated by three men for collecting garbage. However, on routes where streets have grades which make the work too severe on horses, trucks are to be preferred. Also, trucks can more readily be detoured some distance out of their regular route to pick up missed collections and are better adapted to overtime emergency trips.

The side-dump trailer, which is adapted to being loaded as a horse-drawn unit and then coupled into a train with other trailers and towed by a

Heavy traffic streets prove the value of Trinidad!

Every day in all parts of the world Trinidad Native-Lake Asphalt pavements are demonstrating that they have no equal for resisting wear and weather. It is significant that the much-traveled Michigan Avenue Boulevard, Chicago, shown above, is paved with this wonderful product of nature. Trinidad Lake Asphalt was chosen because of its record on other Chicago streets—some have given as many as 46 years of service.

Such a record has never been equaled by artificially produced asphalt. And Trinidad is not only famous for its long life and low maintenance cost, but is attractive, resilient, free from noise, and easy to keep clean and repair.

For *road* building, Bermudez Road Asphalt—another native-lake asphalt—had demonstrated its outstanding merit. Interesting data on request.

The Barber Asphalt Company
Philadelphia

New York Chicago Pittsburgh St. Louis Kansas City San Francisco

Dug from the surface of Trinidad Asphalt Lake

TRINIDAD LAKE ASPHALT

tractor to the point of disposal, has not been used in Los Angeles. This method of collection probably has its advantages where the disposal point is sufficiently remote from the collection area. The following points are against its use in Los Angeles:

The trailers once offered for consideration in Los Angeles weighed more than wagon gears of the same carrying capacity, and also had smaller diameter wheels, which would increase the tractive effort or horses to pull them over unpaved surfaces and up grades.

Operating the trailers in groups introduces difficulties in preventing delays to the group on account of troubles with individual units. Also, it is necessary for them to stop moving in order to be made up into trains, and it is necessary to provide a place where they can be stopped and assembled into trains without offending the owners or occupants of neighboring property.

In Los Angeles, garbage wagons are not allowed to stop moving except when being loaded, and many of the pails along the curb are collected while the vehicle is in motion. The operators are not even allowed to park to eat lunch; so that parking loaded garbage trailers to arrange them into a train would be somwhat of a breach of tradition.

The average cost per pick-up (counting large hotels and restaurants only as single pick-ups) is 37 cents.

Early Disposal by Reduction

In 1914 an expensive permanent plant was built in Los Angeles for reducing the garbage to useful commodities by what is known as the Cobwell process. The promoters of the project had a ten-year contract with the city to pay 51 cents per ton for the city's garbage delivered to the plant. Soon after completion the plant was taken over and operated by representatives of the manufacturing company which had designed and built the mechanical installation. For a number of years the company held its own and was able to pay its bills for the garbage. Its principal revenue was from the grease extracted from the garbage. The grease was used for manufacturing soap. The residual tankage was sold for chicken-feed and for fertilizer. During the war grease brought a high price, and the company prospered. After the armistice and during the readjustment period the company ran for some time at a loss and then threw up its contract. Its financial trouble was largely due to the fact that much of its grease went to foreign markets, and when the value of foreign exchange dropped, the revenue of the company could not be kept above its expenses.

Present Disposal by Hog Feeding

Los Angeles garbage is now loaded by the city on gondola railway cars and sold to a large land-holding company which uses it for hog feed, converting the waste, together with the hog-pen cleanings into fertilizer, which is used for raising citrus fruits on lands surrounding the hog farms. This company pays the city 60 cents per ton for the garbage f. o. b. cars Los Angeles, and pays in addition $1.20 per ton to transport the garbage 60 miles out of town to the hog ranch. The company appears to prosper, indicating that the garbage delivered is worth the $1.80 per ton which it costs.

The ranch supports 40,000 hogs, and these are fed on nothing except the city garbage, except that the sows for 36 hours after farrowing are given special food. The feeding-pens have concrete floors. The garbage is placed by a locomotive crane which draws a gondola car of garbage along a paved railway track adjoining the feeding-floors and unloads the car on the floor with a clamshell bucket. The ranch is equipped with sewers and is carefully planned and constructed with a view to sanitation and economical handling of the garbage, the pen cleanings, and movement of the animals from pen to pen according to their growth.

The gain in weight of the hogs is from 40 pounds to 80 pounds per ton of garbage fed according to the time of year, quality of garbage and condition of the animals. The average quantity of garbage fed on the entire farm is about 19 pounds per head per day. It has been found that it requires several generations of hogs to develop animals best adapted to garbage feeding. Grain-fed pigs brought to the garbage farm do not do as well and are more subject to disease when put on a garbage ration.

The garbage of hotels and restaurants is much higher in food value than average residential garbage, and the large hotels and restaurants could, if permitted, sell the concession of collecting their garbage for substantial sums. If this were permitted, it would seriously interfere with the city's obtaining desirable contracts with large users of garbage.

To forestall this, the ordinance relating to garbage prohibits any one except the city's collectors from hauling garbage in the streets. Litigation with hotel owners resulted in the sustaining of this ordinance in the courts.

Collection of Other Refuse

The separate collection of garbage necessitates separate collection for other wastes.

Domestic non-combustible rubbish is collected with city-owned and operated trucks, the cost being financed by general taxation. This collection includes ashes, which in a nearly frostless city with natural gas and cheap oil for fuel, is a very minor item.

The rubbish is not wasted but is delivered to a company located in the industrial district, which pays the city $502 per month for it. The bottles and other salable articles are sorted out. The tin is removed from the cans by chemical solvents and is recovered as pure metallic tin. After the tin is removed, the remaining sheet steel is pressed into bales so compact that they will sink in melted iron, and these are sold to the iron and steel industry.

Combustible rubbish and market refuse are not produced by all householders as is garbage and domestic rubbish. Its collection, therefore, is not provided for at city expense, but is performed by licensed collectors who are paid directly by those who produce it. The city has an incinerator at which these combustible wastes are burned, and householders who have little to dispose of usually operate small incinerators in their back yards.

The collection and disposal of garbage and rubbish in Los Angeles is under the jurisdiction of the City Engineer, John C. Shaw, and Ralph W. Stewart, Chief Deputy.

New Civic Center for Essen

STRAIGHT LINES MARK THE ARCHITECTURAL DESIGN FOR THE NEW EXHIBITION HALL AND AUDITORIUM AT ESSEN, GERMANY, THE GREAT INDUSTRIAL CENTER IN THE RUHR DISTRICT

"Ground-Floor" Experience in Low-Cost Construction

Low-cost construction?

Tarvia was in on the ground floor of that job. Methods worked out with Tarvia put low-cost improved roads on the map—and kept them there.

Ask highway officials who have made use of Tarvia service. They'll tell you—

—that Barrett's 23 years of experience in low-cost construction has been a big help in working out their programs.

—that, because of that experience, Barrett field men know the answer to just about every question relating to the construction, repair and maintenance of low-cost roads.

Let us know when it will be convenient for a Tarvia field man to call at your office.

Tarvia
For Road Construction Repair and Maintenance

The Barrett Company

New York	Chicago	Minneapolis	Cleveland	Philadelphia	Birmingham	Boston
St. Louis	Salt Lake City	Syracuse	Providence	Buffalo	Bethlehem	Kansas City
Detroit	Milwaukee	Baltimore	Toledo	Cincinnati	Lebanon	Columbus
Youngstown						Rochester

In Canada:
THE BARRETT COMPANY, Limited: Montreal, Toronto, Winnipeg, Vancouver

The Conduct of Routine Fire-Prevention Inspections

CONTINUAL watching and checking of all places of business is one of the chief methods to be used to accomplish the purpose of fire prevention. Routine inspections are to be made by members of the fire department.

The district covered by the inspectors should be the same as the company's call district. It is in the buildings of the fireman's own territory that he may have to fight a fire and so should become familiar with each of them.

A schedule of streets or buildings should be planned so that the work is done in sequence without omissions. There will usually be a few buildings in a district that should be inspected more often than the others. The fire record, occupancy, condition of buildings, type of occupants, and character of the neighborhood will determine this. But generally, each street can be taken in turn and the buildings inspected from one end to the other. This can continue until the whole district has been covered, when a new round is started. It is unwise to arrange the schedule so that the same men inspect the same places on each round. Each should get into all the buildings and not a specified few. In planning this schedule the minimum number of inspections required by the code must at least be complied with.

The equipment needed by the uniformed man in making inspections consists of a pencil with an eraser, inspection cards, and notice book for issuing first notices. A copy of the code may aid him greatly.

What to Look For and How to Look For It

The routine inspections by the uniformed force will no doubt be made at the outset by members who have had little or no previous training in inspectional work. As time passes, the men will naturally become more proficient and will be able to add to their knowledge by study and the application of new ideas that will be forthcoming from year to year. Therefore, this subdivision entitled "What to look for and how to look for it" is offered as a guide to the green inspector who is assigned to this important work.

To understand the purpose of an inspection it is necessary to analyze the duties to be performed. They consist in discovering: (1) that which may cause a fire, (2) that which may aid or feed a fire, (3) that which may permit the spread of fire, and (4) appliances to be used in fighting a fire. These should be carefully borne in mind as the inspector goes through each building, of whatever character it may be.

(*a*) *Looking for the Causes of Fire.*—To discover the causes of fire is the most important task of the inspector. Each section of the building, each room, the yard and all outbuildings should be carefully inspected to find the conditions which may start a fire. To enumerate all of the causes of a common nature would make a very long list, but for present purposes a few may be cited as examples.

The most common cause is the *carelessness* of man. It is therefore well to study the man, whether he be occupant, owner or customer, who is directly responsible for the condition of the premises, making sure that each understands his responsibility and is giving proper attention to it.[1]

The carelessness of man appears in the handling of many everyday and often insignificant things in the home, in the store, in the factory, in the theatre. The inspector should know what these little things are and how they constitute a danger. A few are:

1. Matches
2. Waste-baskets
3. Oily mops
4. Electric irons
5. Open fireplaces
6. Gas irons
7. Gas jets
8. Fireless cookers[2]
9. Candles
10. Open-flame devices
11. Heating appliances
12. Gas stoves
13. Egg-candling apparatus
14. Oily rags
15. Smoking
16. Electric wiring
17. Gasoline[3]
18. Glue pots
19. Caul boxes
20. Steam pipes
21. Storage of hazardous materials
22. Bearings and oil drip pans
23. Mufflers

There are many others to be added to the list, all of which should be well known to the inspector so that he can ferret them out.

He should know the prevailing causes of fires in different types of occupancies. For instance, he should know that one of the most common hazards found in garages is the method of disposing of oily waste and rags. He should know that packing and shipping materials are generally found in an untidy condition in most stores.

(*b*) *Looking for Feeders of a Fire.*—Cleanliness is one of the first essentials that the inspector should demand. The general condition of tidiness is an index to good or poor management. Poor management is usually attended by accumulations of litter and rubbish and improper storage of combustible material. Quantities of inflammable materials beyond the normal daily demands should not be allowed where fire hazards exist Paper partitions and paper-lined boxes to prevent dust seepage are excellent feeders of fires. These and many others should be quickly recognized by the inspector.

(*c*) *Looking for Fire Stops.*—To be able to confine a fire to its point of origin is an index of good prevention technique. Conditions and construction of buildings should be such that a fire cannot easily spread to adjoining sections. One half the problem of fire fighting is that of confining the fire.

The prevention of draught is of prime importance. Air currents give life to fire. These can be reduced markedly by proper vertical and horizontal cut-offs. When a building is of frame rather than of brick, it is all the more essential that vertical openings be closed. Vertical concealed spaces can greatly aid the spread of fire by their chimney-like action.

Because fire naturally travels upward, it is necessary that stairways be trapped, joist channels closed, pipe holes filled up, elevators and stair shafts enclosed. Entrance to these should be through automatically operated doors. It is the inspector's duty, therefore, to see that these doors are in proper working order and that they are not blocked open or otherwise obstructed. Fusible links should be inspected.

In the matter of horizontal spread of

[1] *Cf.* Chapters VI and XIV.

[2] It is reported that an improperly constructed cooker caused a fire by spontaneous ignition.

[3] The inspector should learn how to ask a question which cannot be easily evaded, e.g., "How and where do you keep gasoline?" and not, "Do you keep any?"

Preventing Fires

In addition to the factors of education about fire hazards and their correction, and of persuasion brought to bear upon building users and owners to adopt preventive measures, the element of enforcement is increasingly being advocated and adopted, particularly in the form of the fire prevention bureau within the municipal fire department. This agency for lessening the huge fire losses in American cities receives a comprehensive, detailed treatment in a 166-page booklet entitled "Organization and Operation of a Municipal Bureau of Fire Prevention," by Harold A. Stone and Gilbert E. Stecher, just published by the School of Citizenship and Public Affairs, of Syracuse University (see page 181 of this issue). The accompanying article is a part of Chapter IX of the booklet, on "Routine Inspections," the first of six chapters on the work to be done by a bureau after being established.

REFRACTORS

Nighttime photograph

Daytime photograph

RIVER SIDE

BRIDGE SIDE

Light Distribution of a Typical Asymmetric Refractor, looking down from above

Lighting Peace Bridge

This famous bridge was just recently completed. It connects Buffalo, N. Y., with Fort Erie, Canada. Two types of Holophane Refractors were used in ornamental units to attain illumination that would enable the heavy flow of traffic between the two countries to move with the same safety and speed by night as by day. Asymmetric Refractors were used on the sides of the bridge because instead of wasting light over the river they direct the light downward toward the road and spread it far up and down the bridge, giving even and efficient illumination with economical spacing of light units. Symmetric Refractors were used in the center of the approaches to give the round distribution of light desired at the entrances and driveways to the bridge.

Engineers of the General Electric Company, Westinghouse Company, Line Material Company and Holophane Company stand ready to tell you more about "Refractors for Bridge Lighting."

HOLOPHANE COMPANY, INC.

New York San Francisco Chicago Milwaukee Toronto

HOLOPHANE

fire the inspector should see that wire-glass windows are intact and shutters in good working order. As in the vertical spread of fire, he should inspect fire-doors leading from one room to another. Continuous piles of storage boxes and merchandise should be broken up with liberal aisle space. Belt holes and pipe holes should be closed as tightly as possible.

(*d*) *Fire-Fighting Appliances.*—Appliances to be used as first aid equipment to control and extinguish a fire at the time it starts should be in first-class working condition. To be sure that this is the case, periodic inspections should be made. First, the inspector should see that all extinguishers are filled. The soda-acid type should have a complete inspection once a year at the time it is recharged. A label bearing the date of charging should be attached. Casks and pails should be filled with water and sand boxes should be amply supplied. Fire-hose should be in its proper place. The inspector can make yearly tests of the hose as well as all valves in the standpipe lines.

In the second class of objects to be inspected are fire-escapes, ladders, stairways, aisles, traps to the roof and the like. None should be obstructed, thus preventing free exit and entrance. All ways leading to the roof should be carefully noted and kept clear, for this is one of the points of vantage sought by firemen when called to a fire.

(*e*) *Method of Making an Inspection.*—A word as to the proper method of making an inspection is pertinent here. In dwellings and small mercantile establishments the inspector proceeds by going into the basement and then up through the building and sometimes to the roof, but this process is reversed with larger buildings and industrial plants. In the latter case the inspector first goes to the roof where he can get a bird's-eye view of the risk as well as of the neighboring buildings. He can note the height of the parapets, roof structures and the kind of roof. When finished, he then works down to the basement, inspecting each floor on the way. Whenever there is an elevator he should use it, thus conserving his strength. When he has finished he should discuss any omissions and violations of the code with the proprietor.

(*f*) *Inspection Card.*—It will be very helpful to have an inspection card enumerating the things to look for. Space should be provided on the card for jotting down conditions as found. These cards can be made to suit the requirements of any particular city. They serve the dual purpose of helping the inspector and of making a record for future reference. The following items are suggested as appropriate for a card for routine inspections:

ITEMS FOR THE ROUTINE INSPECTION CARD
(FOR UNIFORMED MEN)

Location:
Occupant:
Owner:
Age of building: repair.
Height: including any blind attics, height above ground.
Area:
Walls: brick, reinforced concrete, concrete block, stone, terra cotta, frame, metal or metal clad, pilasters, steel frame, ornamental or glass fronts, parapet, partitions.
Roofs: construction and covering, finish, mansard, blind attics; cornice—materials and whether cut-off; skylights—material, location, screened.
Floors: condition, oil-soaked.
Ceilings: open, sheathing material, condition.
Floor Opening—Stairs: continuous, staggered, material of enclosure, doors self-closing, traps, doors or traps automatic, how cut-off.
—Elevators: how enclosed or cut off, non-self-closing traps, non-auto fusible link traps.
—Lightwells: through what floors, how enclosed.
—Belt Towers: hatchways, chutes, hoists, and other floor openings.
Fire-Doors: material, hardware, thresholds, automatic, closed nights, condition, clear of stock.
Shutters: same as fire-doors.
Wired-Glass Windows: location, automatic, condition, combustible material inside near.
Exposure: distance to and type of exposing buildings.
Occupancy: by floors for each building, attic space first. Include number of hands employed; how many in full force; hours.
General Management: good, fair, poor.
Processes drying.
Inflammable Volatiles: amount, kind, how and where stored; permits checked, and okayed.
Power: steam, electric, water, gas or gasoline engine.
Boilers: location, setting, woodwork——feet distant; ashes, fuel, coal gas, oil, wood; steam pipes, clear covered; registers clear, hot air blower system, torches, heating irons.
Lighting: electric, gas, brackets, oil lamps, gasoline, acetylene, carbide stored.
Miscellaneous: waste cans, sweepings, smoking allowed, signs, sawdust, spittoons.
Standpipes: location, hose, tested, weak, O. K.; nozzles, valves, steamer connections.
Hand Hose: where, amount and size.
Chemical Extinguishers: kind and number on each floor; condition, charged, last date.
Casks and pails: where: full, condition.
Sand Boxes: where; full, condition.
Inspected by.....
Date.....

As the inspector goes through a building, he can easily underline the items on the card as he notes conditions. After looking for all of these hazards he will become familiar with the building and its contents. This knowledge will be of great aid if he is ever called upon to fight a fire in the building.

A State-wide Program of Park Publicity

INDIANA has a slogan: "The State of Beautiful Parks." Officials responsible for this slogan would doubtless admit that it represents a working ideal as much as an accomplished fact. Nevertheless, the question might be interestedly asked from many quarters: "How did it get that way?" and the answer would be that the Indiana Association of Park Departments is largely responsible.

One of the outstanding activities of this Association at present is a state-wide publicity campaign for more and better playground and recreational facilities. Almost forty newspapers in every part of Indiana are carrying a series of feature articles written by Robert B. Bradbury, Assistant Secretary of the Association, designed to arouse general public opinion in this respect. Mr. Bradbury's articles are full of human interest appeal. They visualize the service of the park to everybody in the community, giving high-light pictures of the happiness afforded by play-facilities, and, conversely, the disgrace that may befall the family whose boys, having nowhere to play, get into bad company, and into trouble. Or, in philosophic vein, he draws an analogy between religion and the higher sorts of recreation. Here is a specimen of his method:

"The telephone jingled, breaking the atmosphere of restful quiet of the X's living room where Mr. X read his evening paper, now and then expounding an item to Mrs. X as she sat embroidering a bridge set.

"Mr. X (impatiently): 'Yes? Yes?'

"Voice: 'This is the Chief of Police; we've caught the leader of the gang that's been breaking your street lights.'

"Mr. X: 'Well, lock 'em up! No use bein' sentimental about it!'

"Voice: 'Well, I'll tell you, X, it's your own boy, Bob.'

"Mr. X: 'Hold it up, Chief. I'll be right down.'

"An ordinary episode, you say—no thrill in that. No—but boys of that little town got a thrill out of it. For from that night dates Mr. X's zeal for play provision and expert leadership for his own and other boys. Several neighbors had previously approached Mr. X regarding modern recreational facilities for the community. Mr. X had scoffed: 'Play fields in a town of 12,000 . . . .?'"

This "lead" is typical of the interest-challenging quality of the present series of articles. The campaign is typical of the publicity activities of the Association, which are designed to build up throughout the state a general knowledge of parks and recreation "such as will be of value to the various boards of park commissioners in that the people for whom the parks are maintained will be calling for so much in the way of new parks or the enlargement of the present park systems that park boards will find it easier to get necessary funds." Assistance of smaller cities and towns is an important function.

Publicity of state-wide appeal is only one of the activities of the Association. It has many. Since organization in 1916, it has acted as a clearing-house of information and ideas relative to the administration, development, maintenance, and finance of parks, boulevards, and playgrounds; it has acted also, from time to time, to secure the enactment of such state laws as it deemed advisable. The membership consists of park commissioners or other city officials having charge of parks, ex-officio and appointive officers such as landscape architects, superintendents, engineers, foresters, and attorneys of all cities and towns of the state. Special committees give attention to such matters as park administration, legislation, park maintenance, horticulture, nomenclature, bird protection, playgrounds and exhibits.

LIGHTING EQUIPMENT THAT BRIGHTENS THE PATH TO PROSPERITY

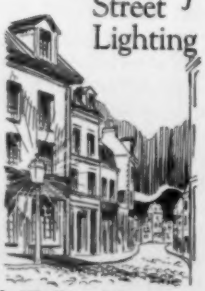
AS your city grows, so should your street lighting system. With this series fixture, the Hi-vo-lite, whose wet process porcelain body has the highest insulating value of any street fixture on the market, additional units may be added without overtaxing your existing system.

Note the neat appearance of these fixtures, there are hundreds of combinations, one of which will surely suit your needs.

Complete Listing

Write for this little booklet. It describes and lists all of the Hi-vo-lite combinations and gives the prices also — write now.

The History of Street Lighting



In 1694 Edward Heming obtained exclusive rights to place a light opposite every tenth house in London. Probably the first street lighting contract.

LINE MATERIAL COMPANY

SOUTH MILWAUKEE, WIS. EAST STROUDSBURG, PA.

In Canada: Canadian Line Materials, Ltd., Toronto, Canada. *Export Department:* New York City

Albany, N. Y. Boston, Mass. Chicago, Ill. Cleveland, Ohio Dallas, Texas Des Moines, Iowa Indianapolis, Ind. Kansas City, Mo. New York, N. Y. No. Charlotte, N. C. Oakland, Cal. Portland, Ore. Los Angeles, Cal.

Asphalt Patching in Galion, Ohio

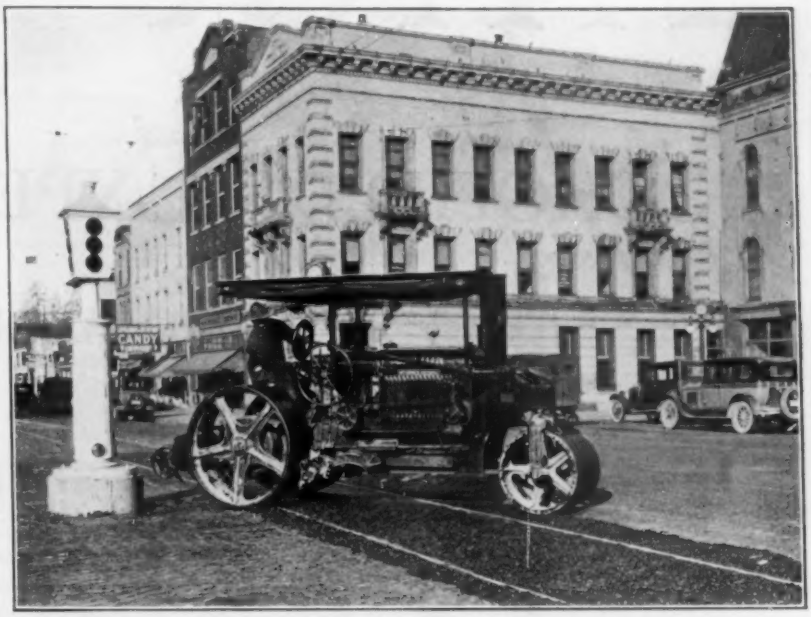
Hot or Cold Mix Compressed with Light Roller Irons Out the Bumps

BECAUSE of lack of funds, on account of weather conditions, and for many other reasons, cities often defer needed repairs until streets are in very bad condition. There are many times also when a few bad places will appear in an otherwise good street.

As a fairly permanent remedy for such conditions, various methods of patching with gravel or crushed stone and a bituminous binder are in general use. This type of repairing possesses many advantages of economy, quick, easy application, and use in almost any weather. It can also be used on almost any type of paving—brick, concrete, stone or macadam.

The crushed stone or gravel is very thoroughly mixed with the binder, which may be either bituminous material dissolved in oil which will quickly evaporate, leaving the material firm, or bituminous material heated to make it fluid, which becomes firm in cooling. In either case the binder must be thoroughly mixed with the gravel or stone. The materials may be mixed by hand, but an ordinary concrete mixer is often used with excellent results for cold patch work.

One illustration shows a main crossing in Galion, Ohio, a town of about 10,000 people. Traffic is very heavy on these streets at times and the rough condition shown in the picture below introduces a big element of danger, since it is often quite difficult to guide machines properly on such surfaces. The use of hot mix patching material here has changed a rough, dangerous street condition into a comparatively smooth and safe one which will be quite lasting.



ROLLER COMPACTING THE PATCHES TO SECURE MAXIMUM BONDING

Either hot or cold patch if not properly leveled and rolled down is likely to fail of being a remedy. It is important that at the proper point of hardening it be thoroughly leveled and compressed. For this work small rollers of 5 to 7 tons, powered by Fordson and McCormick-Deering tractors, are very popular, since they are easily handled and can work to good advantage in narrow spaces.

To prevent the fresh material from sticking to the rolls, some method of oiling is usually used. In some cases this consists of smearing the rolls with oil occasionally, using a large brush. Another practical method, however, is to insert rags under the scrapers on the rolls and keep these rags well saturated with oil.

The methods of patching mentioned above are being used quite extensively on the roadways of our country as well as on city streets. By proper use of these patching methods roads may be maintained in usable condition, and new paving deferred for many years.

TYPICAL SECTION OF A GALION STREET BEFORE PATCHING

See the 1928 Municipal Index

The 34 pages of the section on Street and Road Construction and Maintenance in the new volume of The Municipal Index contain valuable lists for reference. State Highway Department Engineering Personnel is given in full and is followed by a list of the officials in charge of road work in 2,442 of the 3,070 counties in the United States. A very important part of this section of the Index gives the names of the City Engineers in 721 cities of over 10,000 population in the United States, and paving statistics for 402 of these cities.

TANK UP!

ON

SCHOFIELD'S EXPERIENCE

500,000 Gallon Capacity Tank 54' Diameter—35' From Bottom to Top of Shell-Elevated 115' Above Foundation on 12 Latticed Channel Columns.

AGED IN GEORGIA FOR 75 YEARS

SIX SHOPS IN ONE

Pattern	Forge
Foundry	Plate
Machine	Sheet Iron

MANUFACTURERS OF

Water	Tanks	Engines
Vegetable Oil	"	Boilers
Mineral Oil	"	Boats & Dredges
Kerosene	"	Rotary Dryers
Gasoline	"	Steel Buildings
Benzol	"	Special Machinery
Creosote	"	Meter Boxes
Acid	"	Curb Boxes
Seed & Grain	"	Manhole Rings
Molasses	"	Manhole Covers
Standpipes		Municipal Castings

RECENT ORDERS SHIPPED INTO TWENTY-FIVE STATES AND EIGHT FOREIGN COUNTRIES

J. S. SCHOFIELD'S SONS CO.

Founded 1852

MACON, GA.

Tampa, Fla., Office
310 Krause Bldg.

Atlanta, Ga., Office
1503 Candler Bldg.

(ENGINEERING ADVICE GIVEN ON REQUEST)

THE MONTH IN PUBLIC HEALTH

Conducted by JAMES A. TOBEY, DR. P. H.

Federal Health Correlation

THE most notable event in public health during the past month has come from a somewhat unusual source. This episode did not occur within the precincts of a city or state health department, nor within the domain of one of the health demonstrations; it did not take place in the seclusion of the laboratory, nor within the cloistered walls of a university. Instead, the most noteworthy incident in public health progress during recent times was contributed by the Congress of the United States.

On March 7, 1928, the House of Representatives passed the well-known Parker Bill, H. R. 11026, after some two hours' debate but without a record vote. This measure for the coordination of Federal health activities is of significance not only because it provides for certain improvements in the organization and functions of the United States Public Health Service, but on account of its far-reaching importance to national vitality in general.

As adopted by the House, the Parker Bill authorizes the Surgeon General of the Public Health Service to detail trained personnel, medical or scientific, to other bureaus of the National Government upon the request of the heads of such establishments. Since there are among the one hundred or so administrative units of the Government about forty bureaus which are concerned directly or indirectly with some phase of public health, this is an important opportunity for cooperative effort.

The bill also permits the detail of Public Health Service personnel to educational and other institutions, and the reception of scientists at the laboratories of the Service. In addition, increase in the scope of the Hygienic Laboratory is provided, a Nurse Corps is created, and the sanitary engineers and other non-medical scientists of the Service are given a status comparable to that of the commissioned medical officers. A national advisory health committee, made up of representatives of the public health profession, is established, and there are various other features in the bill.

This significant piece of public health legislation, the most important to come before Congress during recent years, must be passed by the Senate and signed by the President before it becomes a law. The President is likely to sign it, as he has expressed interest in the proposition. The bill is now before the Senate, where Senator Wesley L. Jones, of Washington, has introduced a companion measure, S. 3356. The bill has the indorsement of the American Public Health Association, the American Medical Association, the Conference of State Health Officers, the Chamber of Commerce of the United States, and other bodies. It will pass the Senate if sanitarians, city officials, civic workers, and the public generally make known to their chosen representatives that they want this bill adopted.

A NEW FEATURE

Beginning with the present issue, THE AMERICAN CITY *will present a new feature entitled "The Month in Public Health." This department will consist of a monthly review of important matters pertaining to public health administration, and other public health material likely to be of particular interest to our readers.*

The "Month in Public Health" will be conducted by Dr. James A. Tobey, of New York. Dr. Tobey is a graduate in Public Health of the Massachusetts Institute of Technology, where he received his bachelor's degree in 1916 *and his doctorate in Public Health in* 1927. *He is also a law graduate, a member of the Bar of the District of Columbia, and the author of the standard textbooks, "Public Health Law" and "The National Government and Public Health." Dr. Tobey has served as a city and state health official in New Jersey and has been connected with the Federal Government. He was formerly Secretary of the National Health Council, and at present is Director of Health Service of the Borden Company of New York.*

Dr. Tobey has contributed a number of articles to THE AMERICAN CITY *in the past and for several years has been an associate editor of the "American Journal of Public Health." He is lecturer in public health at several universities.*

The Value of Health Officers

CIVILIZATION owes much of its recent progress to the efforts of health officials. Since the middle of the nineteenth century the reduction in death-rates and the incidence of preventable diseases, as well as the increase in the health-rate and the improvement in the physical welfare of the people, have pivoted upon the efforts of health officials, local and state, who have been guided by the accomplishments of science and inspired by the leadership of great sanitarians, such as Sedgwick, Biggs, Chapin, Vaughan, Welch, Trudeau, and others.

This idea, expressed somewhat differently, is brought out in a lengthy editorial in the *American Journal of Public Health*, with which is now combined the *Nation's Health*, for March, 1928. At the beginning of the century, public health administration was stimulated by the fear of epidemics, but the modern public health movement, having gone through the era of the suppression of disease, has become chiefly educational in scope. In this venture official health agencies get support from the numerous voluntary health associations now in the field, not as usurpers but supplementary to the constituted health authorities.

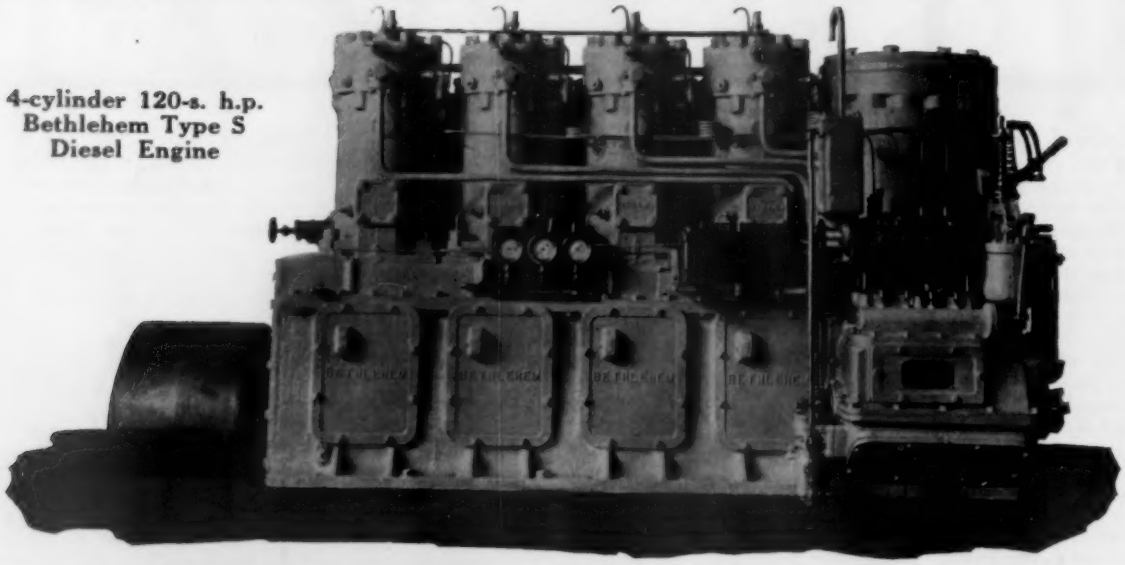
Popular appreciation of the work of health officers still has considerable headway to make, as one incident will indicate. Last month the writer attended a political meeting in one of the growing towns of Westchester County, N. Y. After the business of nominating several candidates for village trusteeships had been expeditiously dispatched, the Mayor was called upon and discoursed eloquently for an hour or more on the business affairs of the community. In a thorough and interesting manner he talked about fire protection and finance, streets and sewers, parks and police, and other municipal subjects. Not once, however, did he mention public health.

Is the health of the citizens of such relative unimportance that it deserves no mention or comment at all? According to *Health News*, the excellent weekly bulletin of the New York State Department of Health, for March 5, 1928, a decade of public health progress in that state has been marked by a decline in the death-rate from 15.2 in 1917 to 12.3 in 1927 (the first ten months). In practical figures this means that there are now living nearly 28,000 individuals who would have died during 1927 if the rate of 1917 were still in effect. Of this number, 6,000 are babies. Deaths of young children from diarrheal diseases have decreased 75 per cent in the ten years, due largely to the continuous improvement of milk supplies.

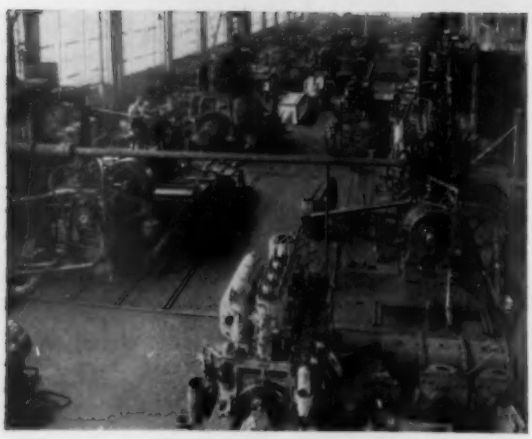
Disease Due to Bad Housing

BY the transference of 34,000 persons from their present one- and two-room slums to two- and three-room sanitary houses, there would be 404 fewer tuberculous patients among these people, with a money saving of £16,276, according to a writer in the English magazine, *Garden Cities and Town Planning*, for February, 1928. In an article entitled "Abolish the Slums," the author, Peter Fyfe, cites figures from the Annual Report for 1926 on the Health and Sanitation of Glasgow to prove that tuberculosis

Quality Assured



4-cylinder 120-s. h.p.
Bethlehem Type S
Diesel Engine



View of a Portion of Bethlehem's
Diesel Engine Department

THE Bethlehem Diesel Engine is built entirely within the Bethlehem organization.

In the design, Bethlehem's engineers have made the best use of a store of knowledge gained through years of experience in designing and building internal combustion engines.

The building of the engine is carried out completely in every detail from start to finish by Bethlehem Steel Company. The ore is mined in Bethlehem's mines, it is smelted, alloyed, converted into steel, and the castings, forgings and other parts for the engine are made in Bethlehem's plant; and finally the engine is assembled and tested in Bethlehem's own Diesel engine department.

The fact that the engine is a product of one organization is the customer's best assurance of the highest quality in workmanship and material.

Bethlehem engineers are always glad to aid in the solution of your power problems.

BETHLEHEM STEEL COMPANY, *General Offices*: BETHLEHEM, PA.

District Offices:

New York Boston Philadelphia Baltimore Washington Atlanta Pittsburgh Buffalo
Cleveland Cincinnati Detroit Chicago St. Louis San Francisco Los Angeles Seattle Portland

Bethlehem Steel Export Corporation, 25 Broadway, New York City, Sole Exporter of Our Commercial Products

BETHLEHEM

is more prevalent in small, crowded slums than in more commodious quarters.

During the 14 years from 1910 to 1924 it was found that 4,004 cases per 10,000 population, or an average of 286 per annum, occurred among families in a particular district who lived in one-room houses or apartments. For families living in two rooms, the figures were 3,304, or an average of 236 per annum, while among families having three rooms there were only 1,988 tuberculosis cases, or an average of 142 per year per 10,000 population. The author also points out that infant mortality has been found to be much greater in congested districts where there is overcrowding in houses than in sections where living conditions are more modern and ample in their accommodations.

While overcrowding and bad housing are unquestionably deleterious to health, it should be stated, in commenting upon this article, that there are many other factors which enter into the tuberculosis and infant mortality rates. In New York City, for instance, it has been found that education of the mother, improvement in economic conditions, and improvement in milk supplies have been the most potent factors in reducing infant mortality. The abolition of the slum is, however, an achievement greatly to be desired.

The Standard Milk Ordinance

SINCE 1922 the United States Public Health Service has been developing local standards for the control of milk. As a result of this endeavor, a standard milk ordinance has been devised and has now been adopted in whole or in part in nearly 200 communities in 14 or more states.

This standard ordinance was most carefully considered on March 8 and 9, 1928, by a committee of the International Association of Dairy and Milk Inspectors, of which the writer was a member. Although convinced that fundamental standards can be formulated for the control of milk, and believing that groups of states should get together and prepare uniform provisions on this subject, this committee adopted a tentative report to the effect that it is not feasible to attempt to draft a specific ordinance, couched in definite phraseology, which will be applicable to all parts of the country.

Blanket Insurance for Municipalities Covering Street Accidents and Property Damage

HOW are New York State cities and first-class villages protected against liability for street and other accidents and for property damage? The use of blanket insurance policies for this purpose has been the subject of a questionnaire recently reported on by the State Bureau of Municipal Information.

Two cities and one village reported having a blanket insurance policy covering street and other accidents. These were Batavia, New Rochelle, and Kenmore.

The city of Batavia has two public liability policies covering personal injuries but not property damage. One is a manufacturers' and contractors' form covering the city's operation of its plants, streets, sewer work, etc.; the other is an owners', landlords' and tenants' form covering maintenance of public buildings, parks, streets, sidewalks, etc. The former does not cover the fire and police departments, as it has been held that a municipality is not liable to the public for accidents caused by firemen or police in the performance of their duty or by fire or police apparatus. Under the latter policy, the fire stations and police stations are covered. The limits of these policies are $10,000 and $25,000.

New Rochelle has in force a municipal public accident liability policy indemnifying the insured for damages on account of bodily injuries resulting from accidents on the public streets and on sidewalks or other ways adjacent thereto. This is limited to $10,000 for bodily injuries or death of one person, and $20,000 for injuries or death of more than one person.

The village of Kenmore carries insurance covering all public buildings, including sidewalks. The amount is for $10,000. The premium is $762.52. The village says: "Our experience has been that it is best to carry the insurance, but the Board recently set aside a fund of $3,000 as a start toward the village carrying its own insurance, adding to it from time to time until it reaches, say $25,000, when from past experience we feel we will be able to meet claims. The Board, however, has not agreed absolutely on this, and we no doubt will be carrying our insurance as at present for some time."

Replies to this questionnaire also indicate the various kinds of liability insurance carried. These cover workmen's compensation, public liability and property damage, especially insurance on city automobiles, trucks and other motor apparatus. In some cases each vehicle has a separate insurance, and in other cases a fleet insurance policy is carried. Various kinds of insurance carried by the municipalities are reported as follows:

BEACON.—"The city carries its own compensation insurance."

CORTLAND.—"Insurance carried jointly with county of Cortland and handled by County Treasurer, Cortland, N. Y."

ELMIRA.—"Elmira has no insurance covering accidents on the streets or sidewalks. But we do have insurance on all our city trucks that may get into any accident.

ITHACA.—"Ithaca carries only such insurance as may create liability by the operation of road machinery of every description, including trucks, automobiles, etc., and the private cars of city employees when operated for city business. The limit specified is $10,000 and $20,000. The coverage for vehicles, etc., is in fleet blanket form and automatically covers and applies under any changes that may be made in the outfit."

LONG BEACH.—"We have a public liability and property damage policy covering the automobiles used in the city employ."

NIAGARA FALLS.—"The city carries liability and property damage insurance on all motor-driven apparatus owned by the city except the fire apparatus and police patrol. Each policy covers a specific apparatus and no blanket policies are carried."

NORWICH.—"The only insurance except fire insurance is compensation, boiler, and a policy covering all the members of the volunteer fire department. The latter went into operation January 1, and the premium is based on the average attendance at fires."

OLEAN.—"In most cases, our liabilities are covered by individual policies made out by parties asking permission to erect electric signs and gasoline stations."

ONEONTA.—"Policies are carried for liability for the Fire Chief's car and ambulance and for property damage for police car."

OSWEGO.—"We carry public liability insurance for our own work only, for $10,000."

SHERRILL.—"Workmen's compensation and public liability insurance based on our payroll is carried and is all the insurance we find necessary at present."

SYRACUSE.—"The insurance policy of Syracuse covering all city-owned automobiles and trucks; amount: public liability, $10,000 to $20,000; property damage, $2,000; in force since April, 1927, and shows a saving to the city."

WATERTOWN.—"Watertown carries blanket insurance $10,000 and $20,000 liability and $2,000 property damage. This insurance covers all automobiles, trucks, and motorcycles owned by the city. Our experience has been that this insurance is very satisfactory."

HASTINGS-ON-HUDSON.—"We have a blanket policy covering gasoline tanks and pumps and overhead signs. This indemnifies the village to the amount of $20,000-$40,000.

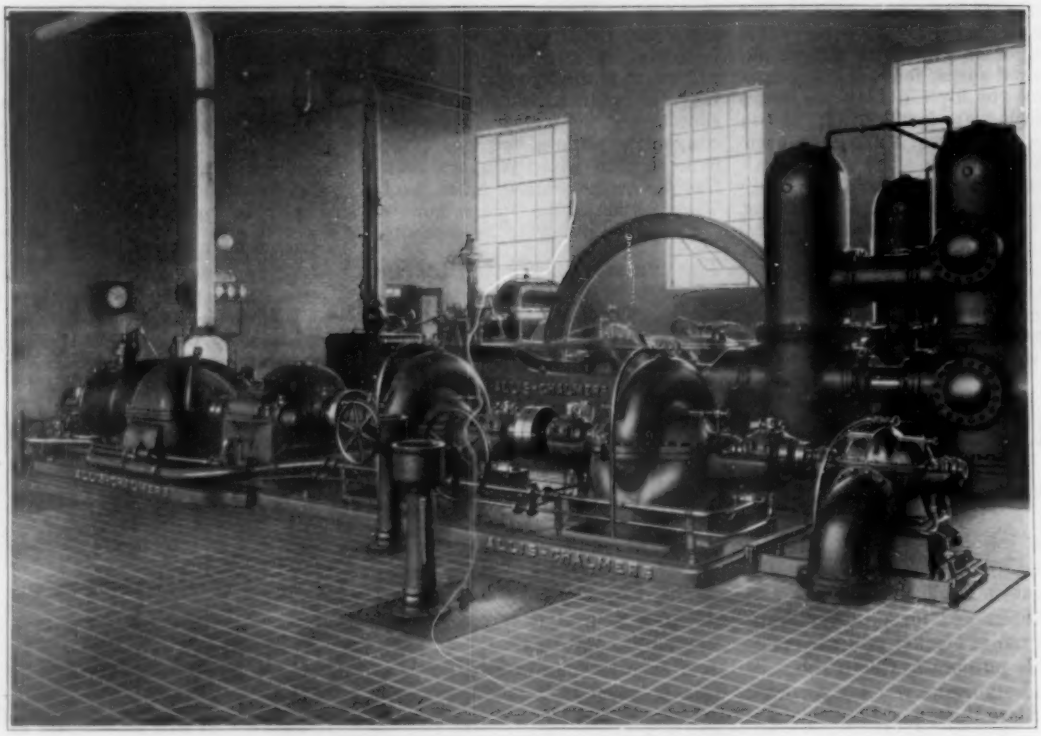
"The employees of the village are covered by compensation policy. This policy has been in force for several years and no claim has ever been made."

MAMARONECK.—"Mamaroneck carries blanket liability insurance on all its fire apparatus, covering for liability, $20/200,000 limits, property damage, $5,000 limits, and fire and theft."

MEDINA.—"The village is a self-insurer or in other words is assuming its own liability. Liability insurance has been secured with some company to cover particular work."

SOLVAY.—"We cover the entire village employees with a Traveler's policy as to workmen's compensation, but the property damage and liability are individual policies on the various vehicles. There is a feeling among the officials that the village should carry its own insurance. Our insurance costs us $4,000 a year, and the amounts received in return in the past prove that most of this would have been 'profit' for lack of a better term."

VALLEY STREAM.—"Contractors' public liability, covering the incinerator plant and garages, and covering those persons not employed by us, who may receive injuries caused by the employees of the Village. This includes the Police Department and excludes any coverage for which a claim may be made through any unlawful assault by a policeman or employee. Workmen's compensation insurance and, of course, automobile policies through the proper forms."



15-M.G.D. Geared Steam Turbine Driven Centrifugal Pumping Unit
furnished the Indianapolis Water Company

CENTRIFUGAL PUMPS OR PUMPING ENGINES

Both types built in the same substantial way. The illustration shows an Allis-Chalmers pumping engine and an Allis-Chalmers geared steam turbine driven centrifugal pumping unit in the same station. This is an example of the confidence users can place in Allis-Chalmers pumping equipment based on our long experience in furnishing economical and reliable pumps for city or other service.

ALLIS-CHALMERS
MILWAUKEE, WIS. U. S. A.

Yes—we should like you to mention THE AMERICAN CITY.

THE CITY'S LEGAL RIGHTS AND DUTIES

Conducted by A. L. H. STREET, *Attorney at Law*

City Was Liable for Its Water Department's Negligent Execution of an Order to Cut Off Water-Supply

To enable installation of a sprinkler system, a warehouse company requested the Richmond, Va., water department to temporarily cut off water-supply to the building. The order was negligently executed by an employee of the department, by turning the valve on a dead pipe line, instead of the proper valve. As a result, when the supposedly empty pipe was cut, the building was flooded, entailing damages aggregating many thousands of dollars. Upholding judgment against the city, the Supreme Court of Appeals for Virginia said (City of Richmond vs. Virginia Bonded Warehouse Corporation, 138 S. E. 503):

"The operation of a water department for the purpose of supplying water for domestic and commercial purposes is a private or proprietary right, and for negligence in such operation a municipality is liable in like manner as a private individual. The fact that the water is also used for the extinguishment of fires does not change the result. . . .

"No one could cut off the water from the city mains except the city or those authorized by it. The city knew, or ought to have known, the location of its pipes."

Railway Station Property was Assessable for the Cost of Street Widening

The St. Paul Union Depot Co. appealed from the confirmation of an assessment against its railway station property for the widening of a street in front of it. Affirming the assessment, the Minnesota Supreme Court said, in the case of Widening East Fourth Street in City of St. Paul, 216 N. W. 607:

"The purpose in widening the street was to improve the approach to the depot, to lessen the congestion of traffic in front of the depot and give it a better 'setting.' It may be true, as claimed by appellant, that the improvement will not increase the number of passengers who will use the depot, nor the business or earnings of the company, but it does not necessarily follow from the fact that the revenues from the property are not augmented that the property is not benefited. If the improvement makes access to the depot more convenient, or makes the property more valuable or desirable, it has received a benefit."

Anti-Mask Ordinance Upheld by Kentucky Court

In the case of City of Pineville vs. Marshall, 299 S. W. 1072, the Kentucky Court of Appeals sustained the validity of an ordinance reading as follows:

"That it shall henceforth be unlawful for any person or group of persons to appear or travel upon any of the streets, alleys or public ways of the city of Pineville, Ky., wearing masks or other disguise so as to conceal the identity of the person or persons so wearing same, . . . and any person who shall in violation hereof so mask or conceal his identity on any of the streets, public ways or alleys of the said city, shall be deemed a disorderly person and shall be forthwith arrested. Upon a conviction of a violation hereof, he or they shall be fined in any sum not exceeding $15 for each offense."

The Court said, in part:

"Masked bandits infest the public highways and streets, rob travelers, banks, and business houses, and escape detection and punishment by concealing their identity. If every one is permitted to go disguised upon the streets of a city or town, the innocent and unwary may fall easy victims to the criminal and vicious, and peace officers be powerless to afford protection, unless a crime is committed in their presence and the offender then seized. Clearly, a disguise is a shield and protection to the criminal, and, in the absence of a regulatory measure, innocently conducted masked parties and parades, as well as masked individuals, traveling upon the streets, afford encouragement to the vicious and criminal, and in this way promote crime and disorder, and tend to endanger the safety, and disturb the peace, of the community, and are therefore a proper subject for police regulation. And as the ordinance is not violative of any constitutional provision, it follows that the lower court erred in holding it invalid."

A City Can Regulate the Location of Taxicab Stands

The city of Springfield, Mass., adopted an ordinance designating taxicab stands on its public streets and forbidding such vehicles to occupy other spaces than licensed. The validity of this ordinance was upheld by the Massachusetts Supreme Judicial Court in the case of Commonwealth vs. Rice, 158 N. E. 797. The Court said:

"The rule in the case at bar, which required taxicabs, and vehicles used for the carriage of persons and things for hire, to make use of taxicab stands, tends to the control of public traffic, protects persons from annoying solicitation, prevents confusion, disorder and danger in the streets, and is a reasonable regulation. . . . The regulation establishing public stands being a reasonable and necessary one in the administration of public safety, it is obvious that a further by-law or ordinance was required to make the observance of the regulation reasonably possible through the exclusion of all other vehicles from the reserved space. No right of any citizen is impaired by an ordinance which prohibits the parking of vehicles at a place in a public street or highway where such person has no legal title to the land occupied by the street or highway and has no interest in such greater than an easement of travel which is held in common with all citizens."

House Mover Held Liable for Damage in Cutting Shade Trees Alongside Street

A house mover was held to be liable to plaintiff for damages for cutting two shade trees standing between the sidewalk and street curb in front of plaintiff's property in Binghamton, in the case of White vs. Berry, et al., 225 N. Y. Supp. 156. The Supreme Court for Broome County decided that it made no difference that the city had issued a permit for moving the house, saying:

"I do not think that the city had the power to authorize the invasion of this property right or interest for such a purpose and I do not think the defendant, even though clothed with the sanction of the city, could thus invade the defendant's property right without making adequate compensation therefor. It is true that a public service corporation, having a franchise to use the streets, may, in a case of necessity, trim and cut trees without liability to the abutting property owner. . . . But that is because the removal of the trees is necessary to the carrying-on of a purpose which is quasi-public, and is a development of the street for one of the uses and purposes for which it is intended and dedicated.

"A private individual is entitled only to the reasonable and proper use of the highway, and . . . the destruction of trees along the street by a private individual for his private benefit is an unreasonable and improper use of the highway; . . . the city has no power to authorize the destruction of the trees for the benefit of a private individual in the furtherance of his private business enterprises, and . . . such trees can only be removed or destroyed when necessary for the improvement of the street or for the benefit of the public in carrying out a public purpose."

Where Physician Acted Under Orders from Town Board of Health in Giving Treatment for Rabies, Town is Liable for His Bill for Services

When a boy was bitten by a dog having rabies, the chairman of the town board of health directed a physician to "look into the case." The physician examined and treated the child, and later sued the parents for his charges. Holding that they were not liable, the Massachusetts Supreme Judicial Court remarked in the case of Bryant vs. Nolin, 158 N. E. 791:

"There was no express contract, and no contract was implied in fact or in law, to pay the plaintiff for the services rendered in the circumstances disclosed. Assuming the physician rendered services outside

Safeguard YOUR STREETS with COPPER and BRASS PIPE

WHEN Copper or Brass is used for water service pipe, municipalities and property owners are not confronted with the expense and inconvenience of tearing up their streets, lawns and pavements. For Copper and Brass are the best pipe made. They CANNOT RUST and therefore will not leak or burst. Copper or Brass pipe gives satisfactory service for a lifetime.

It is true that Copper or Brass costs slightly more than the best grade of corrodible metal. But after a few years of service they prove much cheaper because they do not require costly replacements.

Corrodible water service pipe soon rusts. Then it either becomes choked up or bursts. Expensive repairs follow. Streets and lawns are torn up to make replacements.

One substantial repair bill, made necessary by *corroded* pipe, means a greater total outlay than your investment in *rustproof* Copper or Brass pipe.

Our Technical Department will gladly co-operate with you on water service pipe. There is no cost or obligation.

COPPER & BRASS
RESEARCH ASSOCIATION
25 Broadway, New York

the terms of his employment as town physician to the board of health, and further assuming that such services were reasonably required by the board of health in making the provisions required by law for persons infected with a disease dangerous to the public health, the town was obligated to pay to the plaintiff the reasonable value of the services rendered at the request or at the direction of the board of health, and had a remedy over against the defendant if they were able to pay."

An Ordinance for a Sewage Treatment Plant Was Void for Indefiniteness in Description

A village ordinance for the construction of a sewage treatment plant was annulled by the Illinois Supreme Court in the case of Village of Lena vs. Kable, et al., 158 N. E. 409, as being so indefinite as to permit substitution of a plant different from that specified. The Court laid down these general rules:

"The ordinance must describe the contemplated improvement and its component parts with certainty. . . . It is not necessary, however, to set forth in minute detail every particular of the improvement and every circumstance of the work, since some discretion concerning details must necessarily be left to the board of local improvements. . . . An ordinance for the construction of a local improvement may make a certain product, substance, or compound the standard of quality and fitness, and require that only material equal to it in all respects shall be used. . . . This discretion, however, may only be exercised to permit the substitution of a particular substance or ingredient which meets the standard prescribed, but it is not broad enough to allow the construction of a substantial part of the improvement in a manner and of materials essentially different from the specifications of the ordinance."

Expenditure of Municipal Funds for Publicity for a Proposed Bond Issue Must Be Expressly Authorized

The authorities of a city are not justified in spending money for publicity furthering a proposed bond issue—not even to correct misinformation broadcast by opponents of the issue—unless some statute or charter provision sanctions the expenditure, holds the California Supreme Court in the case of Mines vs. Del Valle, 257 Pac. 530.

The Court affirmed a judgment requiring defendant officials of the city of Los Angeles to account for money spent in publicity for a proposed issue of $35,000,000 electric light plant bonds, saying, in the course of an extended opinion:

"It must be conceded that the electors of said city opposing said bond issue had an equal right to and interest in the funds . . . as those who favored said bonds. To use said public funds to advocate the adoption of a proposition which was opposed by a large number of said electors, would be manifestly unfair and unjust to the rights of said last-named electors, and the action of the board of public service commissioners in so doing cannot be sustained, unless the power to do so is given to said board in clear and unmistakable language."

The Court finds that the defendant officials acted in good faith in a desire to serve the public good, but that would not excuse an unauthorized expenditure of public funds.

Leaving a Pipe Exposed Above a Street Surface Held to Be Negligence on the Part of the City

A dweller in Rome, Ga., tripped over a pipe one inch in diameter that had been left for several days extending along the center of a street about one or two inches above the surface. In affirming an award of damages in her favor against the city (City of Rome vs. Phillips, 139 S. E. 828) the Georgia Court of Appeals held that recovery was not debarred because the injured woman ran across the street in the middle of a block, and because she previously knew of the existence of the pipe, it appearing that she rushed across the street in response to her mother's cry for aid.

An Ordinance Against Sunday Amusements Need Not Cover All Exhibitions

An ordinance of the city of York, Pa., forbids Sunday opening of motion picture shows, amusement parks and other specified exhibitions of similar nature. Upholding the validity of this ordinance against objection that it failed to prohibit all amusements on Sunday, the Court of Common Pleas for York County said in the case of Bothwell vs. City of York, 18 Pa. Mun. Law Rep. 167:

"The ordinance is directed against public exhibitions for pay, held on Sunday, having for their purpose amusement and enjoyment of a worldly nature, and all those who desire to conduct such exhibitions, or who would attempt to conduct such exhibitions are controlled alike by this classification. We see no reason to believe that this classification is arbitrary, but feel it is uniform within the class it attempts to regulate. The purpose of the act is to secure a better observance of Sunday, by the elimination of the pursuit of worldly pleasure and amusement in the class of exhibitions enumerated and which, if allowed, would interfere with the proper observance of that day. The exhibitions given for religious, educational or charitable purposes are eminently a proper exception, because of the affiliation of exhibitions for such purposes with the proper observance of Sunday. These exceptions therefore would seem to be no basis for a charge of discrimination against this ordinance."

Assessment for Street Paving Against Street-Railway Property Without Regard to Benefits Held to Be Void

A statute specially applicable to the city of North Adams, Mass., provided that a street-railway company should be assessed for the whole expense of grading and paving the portion of a street occupied by its tracks and a space of eighteen inches on either side of them; the statute being one dealing with the paving of streets and providing for the assessment of part of the cost against abutting property.

This law was declared to be void in an opinion handed down by the Massachusetts Supreme Judicial Court in the case of Croft vs. Board of Assessors, 158 N. E. 561, because it left out of consideration the amount of benefit conferred upon the street-railway company by the improvement. The Court remarked:

"The assessment here is manifestly not intended as an excise tax. It is an exaction toward the expense of a public improvement, and must be limited by the benefit conferred upon the property subjected to it."

Chinese Pupils Held Properly Excluded from Schools Set Apart for White Children

There is nothing in the Federal Constitution or the treaty between the United States and China to forbid exclusion of Chinese children from schools set apart for white children, where equal school facilities are provided in separate schools provided for the colored races, holds the Mississippi Supreme Court in the case of Bond vs. Tij Fung, 114 So. 332.

The Court reaffirms a decision to the effect that Chinese children are entitled to the benefits of the public schools for the colored, and holds that such pupils cannot force themselves into schools set apart for the white population, "because of some fancied disability of the teachers, or some fancied inequality in the conduct of the schools."

City Cannot Impose Imprisonment for Violation of Ordinances Unless Expressly Empowered

"Unless the power is expressly conferred, a municipal corporation cannot inflict the penalty of imprisonment upon an offender for a violation of an ordinance," declared the Montana Supreme Court in the case of City of Bozeman vs. Merrell, 261 Pacific Reporter, 876.

Ordinance Restricting Character of Signs That May Overhang Sidewalks is Upheld in Arkansas

The power of the city of Little Rock to ordain that no signs shall be suspended from buildings in the business section, excepting electric signs of all-steel, skeletonized construction, weighing not more than 400 pounds, was sustained by the Arkansas Supreme Court in the case of Berkau vs. City of Little Rock, 298 S. W. 514.

The regulation was unsuccessfully attacked as creating a monopoly in favor of certain sign manufacturers. The Court says that it is sustainable as promoting the public safety by eliminating wooden, cloth and other signs regarded as dangerous.

Although it is difficult to understand just why a sign must be an electric one in order to be safe, almost any court would probably uphold an ordinance of this character on the independent ground that a sign is an encroachment upon a public street and that it is within the power of the authorities in control of the street to impose conditions upon which the privilege of maintaining a sign in a street may be enjoyed.

WATER WITH UNFAILING PRESSURE

A working water supply is efficient only so long as the means of pressure behind it is sure and economical.

It is for this reason that the elevated steel tank is the accepted method of combining water storage and pressure.

Through nature's gravity agent the elevated steel tank provides an unfailing, low-cost pressure ample to meet the emergency as well as the regular demand.

P. I. W. engineers will gladly submit helpful specifications and suggestions on an elevated steel tank to meet your exact needs.

Sizes from 5,000 gallons up to 2,000,000 gallons.

P.I.W.
STEEL PLATE CONSTRUCTION

P. I. W. Products include

"Fluid Fusion" Welded Stills
"Fluid Fusion" Welded Steel Pipe
"Fluid Fusion" Welded Boxes, Bins and Kettles
Tanks up to 120,000 barrels capacity
"Pennsylvania" Tank Cars
Process Industry Equipment
Oil Refining Equipment
Elevated Steel Tanks
Penstocks
Standpipes
Annealing Boxes
Galvanizing Kettles
Smokestacks
Agitators
Blast Furnace Equipment
General Light and Heavy Steel Plate Construction
P. I. W. Steel Shipping Barrels

The PETROLEUM IRON WORKS COMPANY
SHARON, PA.
BRANCH PLANT
BEAUMONT TEXAS

NEW YORK | CHICAGO | HOUSTON | TULSA

MUNICIPAL ACCOUNTING AND FINANCE

Conducted by FRANCIS OAKEY, C. P. A.
Member of the Firm of Searle, Oakey & Miller, New York

The Relation of the Accounting System to the Budget

ADMINISTRATION of the budget consists of two main processes, namely, first, the preparation of a complete program of expenditure and of financing; second, the execution of the approved program as evidenced and made definite by act of the legislative body.

In order to perform these two processes intelligently, complete and accurate information must be produced and made instantly available reflecting the financial condition of the city, and the results of its operations; and this information must be conveyed to the administrative and fiscal officers and to the legislative body promptly, so that action can be taken when action is needed. The instrument by which the required information is produced is an accounting system designed in accordance with modern standards. In fact, without such a system effective administration of the budget is impossible.

The Accounting System as a Means of Preparing the Financial Program

The preparation of a series of expenditure estimates used to be in many cases, and still is in some, the nearest approach made to the preparation of a financial program. But a series of such estimates is not a financial program; it is nothing more than an expedient for obtaining ill-considered appropriations so that the operations of the city may be carried on in some fashion. A financial program for a city must include not only estimates of expenditures but also estimates of the means by which it is proposed to finance the expenditures. The estimates of expenditures must be justified by a well-planned program of work to be done, expressed in terms of the amount and cost of labor, supplies and material required to do the work; and these estimated costs must be based upon the results obtained in the recent experience of the preceding fiscal period. Moreover, these estimates of expenditures must be expressed in standard terminology and arranged in accordance with adopted standards of classification, in order that there may be a common understanding between those who estimate and those who approve or disapprove. Finally, the estimates of expenditures must be coordinated with and balanced against estimates of the means proposed for financing them.

In order to produce such estimates with sound judgment and to present them in such form as to justify them in the eyes of the legislative body, a system of accounting is necessary which produces accurately and completely statements of expenditures in accordance with a standard classification as follows:

First, the primary classification must be according to the departments, bureaus, divisions, boards and commissions of the city government.

Second, the expenditures of each department or other subdivision of the government must be classified according to functions or activities.

Third, the expenditures of each function or activity must be sub-classified according to character; that is, a distinction must be made between (a) expenses of administration, operation and maintenance and (b) capital outlays for additions to buildings and equipment.

Fourth, the expenditures for the administration, operation and maintenance and for the capital outlays for each activity must be sub-classified according to objects.

The estimates of the means of financing should include, first, an estimate of the surplus of all expendable funds; second, estimates of the revenues to be collected; and, third, the amounts which it is proposed to borrow.

In order to make an intelligent estimate of the surplus, accurate and complete accounts of expenditures and of revenues are essential. From such accounts the actual surplus resulting from the operations so far completed is first determined and to this figure are applied estimates of the expenditures to be made and the revenues to be collected during the remainder of the fiscal period. These latter estimates cannot be intelligently made unless accurate and complete accounts of expenditures and revenues are available.

The estimate of revenues to be collected during the future fiscal period must also be based upon accurate revenue accounts kept in complete detail.

The Accounting System as an Instrument of Effective Execution of the Financial Program

After the program of expenditure and of financing has been reviewed, modified and enacted into law by the legislative body, the accounting system is the instrument by which it is executed effectively. In fact, all intelligent action taken in the execution of the financial program proceeds from complete and accurate information respecting the progress of expenditure, of revenue collection and of borrowing. This information can be produced only by means of an efficient system of accounting.

The force of the foregoing statements is apparent when consideration is given to various duties which must be performed to accomplish effective execution of the financial program. There must be a constant control over expenditures. Expenditures which will result in over-expenditure of appropriations or which are not within the scope and purpose of appropriations must be prevented. If through changed conditions the full expenditure of an appropriation is not justified, then the total amount to be spent must be correspondingly reduced. If the power to make transfers from one fund or appropriation to another is delegated by law to the executive, then such transfers must be justified in the light of exact information before they are made. If it is found that collections of revenues are not coming up to expectations, steps must be taken to reduce expenditures in order to avoid a possible deficit. Such reductions cannot be made intelligently without a complete detailed review of the expenditure program in relation to the expenditures already made, so that in the revision of the program essential services may be maintained as nearly as possible in a state of sufficiency.

There must also be a constant control over accrual and collection of revenues. It must be ascertained that revenues are accrued promptly, that taxes are assessed and billed at the dates required by law, that penalties are imposed on the dates the law specifies, and interest collected when the law so provides. The progress of the collection of revenues must be constantly watched to detect

ONLY THE BARBER-GREENE HAS THE DISC FEED

Here it is: 1. B-G Loaders are fast. Every bucket takes a heaping measure — and clean-up is clean. 2. B-G repair bills are practically nil.

Here's why: 1. Two flat revolving discs (patented) edge into and under the pile—making sure that each up-coming bucket is filled brimming to the top.

2. The floating boom (patented) rides rough ground—keeping strains and twists away from the loader itself. Wear and tear is slight.

See how others have learned the low down on low loading costs. Ask for our book "Loading Layouts."

THE LOW DOWN ON LOW COSTS

Barber-Greene Company
515 W. Park Avenue, Aurora, Ill.

Disc Feed Barber-Greene LOADERS

Model "25"—1 yard per minute

Model "42"—1¼ yards per minute

Model "28"—wheel mounted

and correct laxity on the part of collectors.

There must also be a constant control over the borrowing of money, whether on temporary loans or on authorizations for the issuance of bonds, in order to make sure that money is borrowed only as it is needed, so that interest charges may be saved.

Space does not permit the enumeration of all the steps which must be taken to execute the financial program effectively. The foregoing outline will suffice to indicate that complete information respecting expenditures, revenues, and borrowings must be constantly available in comparison with the budget estimates. In addition of funds, appropriations, and allotments and the cash position of the Treasury must be known at all times.

All this information must be produced by means of the accounting system. An efficient accounting system is the only reliable basis for the guidance of the executive in formulating and executing the program of expenditure and of financing. It is also the only reliable source from which the legislative body may obtain the information it needs to pass upon the proposals and requests of the executive branch of the city government.

Copyright, 1928, Francis Oakey.

EDITORIAL NOTE.—Students of municipal finance will find in The Municipal Index for 1928 a valuable article by Francis Oakey giving "An Outline of an Accounting System for a Small City." The suggestion, often made, that cities should adopt the introduction of business methods in the municipal accounting system is shown to be true only in certain respects. The divergent purposes of commercial and city accounting systems are stated and are made clear by an analysis of the means by which the executive and legislative bodies may secure the information relevant to the management of the municipal finances. "The final test of sound municipal accounting and reporting is applied by answering this question: Does the statement, item, or account convey the information on which decision can be reached and action taken in respect to those questions which must be settled to formulate and execute the programs of expenditure and financing." Mr. Oakey shows in clear detail what these records and accounts should be and do, excluding all confusing and useless information.

Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

ZONING NOTES

From Data collected by the Zoning Committee of New York (233 Broadway)

Recent Zoning Decisions

Illegally Issued Permit May Be Revoked

NEW JERSEY.—*Ostrowsky* v. *City of Newark*, 139 Atl. Rep. 911. The complainants obtained a permit to erect a sixteen-family apartment house in a district in which under the zoning ordinance the building of an apartment house for more than thirteen families was forbidden; and construction under the permit was begun. *Held* that the permit was illegally issued and could be revoked. On appeal to the Board of Adjustment, the Board may revoke the permit or impose conditions upon action thereunder in conformity with zoning ordinances in force.

While an appeal is pending before the Board of Adjustment, neither the order appealed from nor the action of the Board pending the final disposition of the appeal are subject to review in the Courts.

When a "Boarding-House" is Not a Boarding-House

NEW YORK.—*City of Yonkers* v. *Horowitz*, 226 N. Y. Supp. 297. A house used for the purpose of profit by supplying board and lodging to children intrusted to the care of defendants by their parents or guardians is not a "boarding-house" within a zoning ordinance permitting lodging- or boarding-houses in a given district.

Which Sides Are Front and Rear?

NEW YORK.—The side of an apartment building on which the main entrance is located is not controlling on the question as to which sides are the front and rear, respectively, within a zoning ordinance provision requiring front and rear yards of certain dimensions, but surrounding circumstances determine the question.

Is a Street a "Public Place?"

NEW YORK.—Matter *of Gramercy Park Association*. This is an application for a peremptory mandamus order to compel the Tenement House Commissioner of the city of New York to revoke his approval of plans and specifications and his permit for the erection of a tenement house in East Twenty-first Street, which, for that portion of it opposite the end of a street known as Gramercy Park West, is to be 150 feet high. The latter street has been regarded as a public street, although the city does not own the fee in it.

East Twenty-first Street is 60 feet wide. Under the tenement house law a tenement house may not exceed a height equal to one and one-half the width of the street on which it abuts. Under the zoning resolution where a street borders a "public place, park or body of water," the width of the street is the mean width of such street plus the width of such public place, park or body of water, and this provision has been used as a guide to the interpretation of the word "width" under similar circumstances in the tenement house law. *Held* that in this connection Gramercy Park West must be a "public place."

NOTE BY EDITOR.—If this definition holds in the upper courts, there are hundreds of cases in New York City in which tenements opposite the ends of streets 60 feet wide can exceed in height similar structures, or that portion of the same structure, on other portions of the 60-foot street. It is hard to believe that such an unfortunate result was intended by the framers of the legislation in question; and, it is submitted, the Courts should not be astute to give these laws such an interpretation. It is certainly an unusual use of language to speak of one street as "bordering" another; and although for certain purposes, such as the commission of a crime, a street, as well as a theater or a public building, is undoubtedly a "public place," it would seem to have been municipal cemeteries, aviation fields, markets and the like which the framers of the zoning resolution had in mind, rather than streets.

Group Houses in a Single-Family District

NEW YORK.—*Matter of Westchester Housing Corporation* v. *Bunnell*, 131 Misc. Rep. 251. While the intent and meaning of the zoning resolution of the village of Pelham is that a dwelling erected under it for one family should be detached from another such dwelling, the situation of the land in question warrants a finding that the zoning board of appeals might well exercise the discretion vested in it under the Village Law to grant relief in cases of practical difficulties or unnecessary hardship and allow the group houses divided by party walls in the location in question.

NOTE BY EDITOR.—This is a rehearing of the same case reported in these Notes for October, 1927, in which the Court seemed to define a one-family house in such a way as to include attached houses separated by party walls. On rehearing, the Court, instead of so doing, allows the attached houses in the locality in question as a relief from practical difficulties or unnecessary hardship, thus intimating that such houses, in so far as the ordinance in question, at least, is concerned, are not one-family houses.

A Border-Line Case

PENNSYLVANIA.—*In re Gilfillan's Permit*, 140 Alt. Rep. 136. The general tendency of the Courts has been toward liberal construction of legislation conferring power to create zoning ordinances, in recognition of changing needs of municipalities due to growth and development.

The municipality was unauthorized under the zoning ordinance to refuse a permit to a retail lumber dealer to erect a cement-block storage building where the line separating the residential and the business districts ran through the lot on which his business was conducted; additional construction not being detrimental to public welfare, safety and health.

An announcement of special interest

to every Road Official, Contractor, and Industrial user of Tractive Power

Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

has purchased in its entirety

MONARCH TRACTORS CORPORATION

RECOGNIZING the supremacy of Monarch tractors, Allis-Chalmers Manufacturing Company has added "Monarch" to the organization which for over 25 years has maintained a world-wide reputation as designers and manufacturers of quality machinery.

The manufacture of "Monarch" tractors will continue in the Springfield, Ill., plant; new equipment assures increased production of 6-Ton and 10-Ton tractors.

The experienced management which has established the leading position held by Monarch will continue in charge of engineering, manufacturing, sales and service, assuring cooperation with Monarch owners and distributors.

Substantially lowered prices now in effect bring the New-Improved 6-Ton and 10-Ton models to an unequalled basis of value.

More Power Under All Soil Conditions at the Lowest Price per Draw-bar Horse Power

Ask the nearest Monarch distributor to show you the 6-Ton with 40 H.P. rated capacity (50 H.P. maximum at the draw bar), dependable for pulling a 10-foot grader at capacity; and the 10-Ton, rated at 59 H.P. with a big reserve within its maximum draw-bar capacity of 78 H.P., furnishing the power, speed, traction, endurance for capacity loads in every branch of dirt-moving, contracting and hauling.

In all parts of the U. S., these tractors have established performance-records for Counties, Townships, Cities, State Highway Departments, Contractors, Engineering and Industrial Firms. Get the facts on Monarch-Performance! A demonstration on your work will convince you of Monarch supremacy. Write us today.

MONARCH TRACTORS CORPORATION

SUBSIDIARY OF ALLIS-CHALMERS MANUFACTURING COMPANY

SPRINGFIELD, ILLINOIS, U. S. A.

Yes—we should like you to mention THE AMERICAN CITY.

Recent Important Court Decisions Uphold Restrictions on Subdivision Platting

THREE important court decisions relating to the requirement that plats of subdivisions be approved by city planning commissions before they may be recorded have been rendered since the beginning of the year. The first was in the case of Ridgefield Land Co. v. Detroit (217 N.W. 58). Bulletin No. 3 of the National Conference on City Planning says of it:

"A decision of the greatest importance has just been rendered by the Supreme Court of Michigan. It is important to plan commissions, since it sustains their right to determine the street system of new subdivisions; to cities, since it approves the principle of master planning; and to subdividers and property owners in general, since it gives them the protection and guidance of a master plan."

The case is stated as follows:

"The plaintiff asked the planning commission of the city of Detroit to approve for record a plat consisting of 80 acres bounded on the north by Pembroke Avenue and on the east by Livernois Avenue. Detroit's master plan specified a width for Livernois Avenue of 120 feet, and for Pembroke Avenue, 86 feet. The proposed plat gave a width of 66 feet for each of these streets and this was the width elsewhere in built-up sections. The plan commission had refused to record the plat, but finally agreed to approve if Livernois Avenue was made 83 feet and Pembroke Avenue was given a 10-foot building line in addition to the 66 feet indicated on the plat. The plaintiffs refused to make these changes and brought a writ of mandamus, which was denied in the lower courts."

After finding that the Detroit Common Council had power under the law to adopt a general plan for the width of streets and to refuse to approve any plan not conforming thereto, and that such a plan, as prepared by the City Plan Commission and other commissions and authorities, had been adopted, the Court denies the contention that the statute gives the city no power to require a greater width of the streets in question than their width as dedicated in other subdivisions prior to the adoption of the master plan; and says further:

"The error in plaintiff's position is the assumption that in requiring an additional dedication and the establishment of a building line to conform to its general plan, the city is exercising power of eminent domain. Its argument would have merit and the authorities cited would have application if this were a case where the plat had been recorded and the city were undertaking to widen the streets or to establish a building line. But this is not such a case. Here the city is not trying to compel a dedication. It cannot compel the plaintiff to subdivide its property or to dedicate any part of it for streets. It can, however, impose any reasonable condition which must be complied with before the subdivision is accepted for record. In theory at least, the owner of a subdivision voluntarily dedicates sufficient land for streets in return for the advantage and privilege of having his plat recorded. Unless he does so, the law gives him no right to have it recorded." (Citing Ross v. ex rel. Goodfellow, 7App. D.C. 1.)

"In the instant case, the defendants have imposed two conditions with which the plaintiff is required to comply for the privilege of having its plat recorded. They are reasonable and necessary for the public welfare. In the exercise of its power under the statute and its charter, the city had a right to impose them. They do not constitute the taking of private property for public use and are not an infringement on plaintiff's constitutional rights. The circuit judge was right in holding that the statute conferred power upon the city of Detroit to adopt its present general street plan and to refuse to approve and record all plats that did not conform thereto."

The case wherein the second decision was rendered is entitled "In the Matter of Title Registration Application of William M. Sullivan." (No. 521, Court of Common Pleas, Hamilton County, Ohio.) It relates to property in Cincinnati. The city, represented by City Solicitor John D. Ellis and his assistants, Ralph A. Kreimer and Milton S. Schmidt, opposed the application. Alfred Bettman, who argued the case for the city as *amicus curiae*, states that the subdivision statute provides that no plat of a subdivision should be recorded unless submitted to the planning commission, and that an attempt was made to evade this regulation by registering the tract under Torrens law registration and by marking streets as private instead of as dedicated. The decision was squarely for the city. An attempt to distinguish between "public" and "private" subdivisions was ruled out, the Court saying:

"Subdivisions are 'private subdivisions' and the dedication of the streets on a plat does not of itself make the streets, nor the subdivision including the streets, 'public' in any sense. We mean that the lots, and the indicated streets on the plat of subdivisions are all private property until the city formally accepts the streets as dedicated. Whether dedicated or not, the streets are private until so accepted."

The applicants' effort to interpret certain parts of the statute so that the requirement of planning-commission approval should apply only where streets were being dedicated, failed. The Court stated, "In short, when Section 3586-1 says that 'no plat of subdivision of land shall be recorded' without approval of the City Planning Commission, the Court will withhold its approval of a plat until said section shall have been complied with."

The third decision, just rendered, is by the Supreme Court of Ohio, in Prudential Cooperative Realty Co., Inc., v. Youngstown. The syllabus is reported as stating:

"Section 4346 General Code, requiring plats of land within three miles of the corporate limits of the city to have the written approval of the city planning commission of such city endorsed thereon before such plat is entitled to record in the recorder's office of the county in which such city is located, is constitutional."

City Planning and Zoning as a Stimulus to Industrial Development

IT is my judgment that one of the most important, if not the most important of the engineering provisions for a city's growth is that of the application of sound principles of planning and zoning. A city properly planned develops a well-balanced and usually a permanent growth. Careful supervision can be exercised in a city's subdivision activities to insure a provision for streets and thoroughfares that will conveniently connect both urban and suburban districts. Major streets and convenient traveling encourage segregation, which will develop expansion and growth.

Municipal growth may be traced in many instances to industrial and commercial prosperity. The lack of manufacturing sites having available shipping facilities, oftentimes due to inadequate or improper industrial zoning, is, I believe, an important consideration in the matter of a city's growth. A periodical check on the supply and demand of industrially zoned territory within a city, would, I think, stimulate a city's industrial progress. Many large employers of industrial labor seeking new factory sites give careful consideration to the available sites for rail shipping and the convenience of thoroughfare travel, in order that their products may be economically marketed. A lack of such convenience retards industrial development. Therefore, thoughtful administration of city planning and zoning will have a great influence upon a city's growth.

—From a paper delivered by H. G. Gray, City Engineer, South Bend, Ind., at the Fourteenth Annual Purdue Road School.

DIGNITY ~ COMFORT ~ SPEED

To transport the sick and injured with the utmost gentleness and comfort.

To carry them comfortably at high speed; for when a life hangs in the balance, time is measured in split seconds.

To maintain the prestige and dignity of the owner or the institution to which the vehicle belongs.

These are the fundamentals designed and built into Henney ambulances:

Nothing skimped, nothing shoddy, nothing omitted that would make for endurance, comfort and distinction.

Back of Henney ambulances is sixty years experience in vehicle building. An unbroken record of progress from the sturdy buckboard of pioneer days to the finest, most distinctive motorized hospital and funeral coaches.

The assurance of substance and stability behind the Henney name-plate gives Henney vehicles a preferred standing with the great hospitals and the high grade surgeons and funeral directors.

Since 1868

HENNEY MOTOR COMPANY

Freeport, [Export Representatives H. M. Robins Company, Detroit] Illinois

MUNICIPAL AND CIVIC PUBLICATIONS

Prices do not include postage unless so stated

Regional Survey of New York and Its Environs, Volume I: Major Economic Factors in Metropolitan Growth and Arrangement.—By Robert Murray Haig, Ph.D., Professor of Business Administration, Columbia University, in consultation with Roswell C. McCrea, Ph.D., Hepburn Professor of Economics, Columbia University. Published by Regional Plan of New York and Its Environs, New York. 1927. 111 quarto pp. Illustrated. $3.00.

The studies made during the last four years by Dr. Haig and Dr. McCrea are here analyzed. They cover nine important industries and the activities of storage and marketing, finance, and retail trading, and are fundamental in relation to the physical, social, legal and administrative problems of the Region. The layman easily recognizes the connection between transportation and the distribution of industries, and also the bearing of economic conditions on social and architectural progress. The principle involved should be of interest to the majority of the readers of THE AMERICAN CITY; it is clearly stated by Thomas Adams in the Foreword of this volume: "A plan should be 'a productive piece of economic machinery,' and to be so it need not be the less noble or orderly in design. What stands in the way of order and beauty in municipal design is not the need of true economy, but the prevalence of fallacious and erroneous ideas of what constitutes liberty that grow up with bad conditions whose primary justification for continued existence is that they have existed in the past. Herein lies the difficulty of applying effective measures of zoning, which seek to prevent or arrest bad conditions in conformity with sound economic principles and the true values of the community." The material and its analysis, while profound, are by no means dull in the presentation. The many diagrams are a joy for clarity, and the whole is an enlivening interpretation.

City Planning Board of Boston.—The Thirteenth Annual Report of this organization (1926) is a substantial volume of 102 pp., recording present progress and something of the future plans for the realization of the Board's complete program. Of much more than local interest is the 40-page report "On Betterment Assessments for the Laying Out and Widening of Streets in the City of Boston." This constitutes Appendix 1 and contains a review of the general theory and practice of special assessments for financing public improvements, with a report on practices in the different states; also a lengthy comparison of the Massachusetts system with those in practice in other states. (Apply to the Board.)

The Size of Retail Business Districts in the Chicago Metropolitan Region.—"Fixing the relative size and location of use districts is as much a part of zoning as the regulation of building heights and area. . . . To this part of zoning the economist can make the greatest contribution. . . . But *how much* land shall be set aside for industrial purposes or for retail business use?" The present study, in the form of a 7-page reprint from the *Journal of Land and Public Utility Economics*, is designed by its author, Coleman Woodbury, Research Associate, Institute for Research in Urban Land Economics, Northwestern University, to supply information on this subject. (Apply to the Institute, 337 East Chicago Avenue, Chicago, Ill.

A Model Firemen's Pension Fund Bill.—This is a bill for "An Act to Provide for the Establishment, Maintenance and Administration of a Firemen's Pension Fund in Cities Having a Population Exceeding Two Hundred Thousand Inhabitants." Its 38 sections cover every legal phase of the subject, including such matters as Power and Duties of Pension Board, the Medical Board, Duties of City Officials, Revenues of Pension Fund, etc. 34 pp. (Apply to Municipal Reference Library, 1005 City Hall, Chicago, Ill.; 2 cents postage.)

International Association of Fire Chiefs.—Among numerous important topics discussed at the 1927 convention of the I. A. F. C. were: "Cooperation between Police and Fire Departments for Traffic Regulation"; "Preparedness for Major Disasters"; "Investigations of Arson Fires"; "Need for Fire Fighting Equipment in High Building Construction"; and "Modern Assignment Systems." Complete text of these and other papers and discussions are included in the Proceedings, just issued. (Apply to the Secretary, James J. Mulcahey, Chief, Fire Department, Yonkers, N. Y.)

A Capital Expenditure Program for San Francisco.—"Enumerating proposed and 'continuing' major projects; the inadequacy of revenues therefor; and emphasizing the need of orderly planning and financing for the city's proper development." A carefully thought-out solution applying scientific financial principles to a problem that is typical. An 11-page report of a study by the San Francisco Bureau of Governmental Research. (Apply to the Bureau, Foxcroft Building, San Francisco, Calif.)

A Proposal for Financing the Capital Outlay for Detroit Schools.—Involves the adoption of a modified pay-as-you-go policy, whereby the debt margin will be increased annually until an additional margin of $93,000,000 is reached in 1958, releasing that sum for needed improvements that cannot be financed under the pay-as-you-go plan. 29 pp. with numerous tables. 50c. This is report No 100 of the Detroit Bureau of Governmental Research, Inc. (Apply to the Bureau, Detroit, Mich.)

Municipal Progress in Houston, Texas.—Building permits for 1927 totaled $27,327,775; 35 miles of permanent new paving were laid; $75,000 was spent in park improvement; two new playgrounds were opened; and three new fire stations. These are only a few round-sum items from the account of Houston's last year accomplishments recorded in the *Quarterly Municipal Review*, October-December, 1927. Activities of the Port of Houston, of the Fire Department, the Police Department, Water Department, and every other department of the city's affairs show healthy condition, with "the greatest construction program in the city's history" adopted as the 1928 motto. (Apply to the *Review*, City Hall, Houston, Texas.)

Civic Pittsburgh.—Some municipalities publish local civics textbooks for use in the schools. Pittsburgh "has published very few reports of any nature since 1916. Hence the present work prompted by inquiries from students and other citizens for official city facts. The author, J. S. Slippy, was for ten years chief accountant in the mayor's office, and has apparently gone to original sources for facts and figures. (Apply to author, Pittsburgh, Pa.)

Annual Report, New York State Board of Housing.—An 8-page extract and summary in mimeograph form, appraising the State Housing Law as an aid in promoting better living conditions for wage-earners, and reporting progress made under it. It also discusses added impetus which would be given by the adoption of certain amendments and modifications of the law, and analyzes the present rent structure in certain of its economic and financial aspects and offers recommendations. (Apply to the Board, 949 Broadway, New York.)

Traffic Survey, Columbus, Ohio, 1927.—A 45-page report of the City Planning Commission, R. C. Chaney, Engineer, presenting maps, statistical and descriptive data, also discussion pertinent to the local traffic situation. It shows the existing traffic conditions and advances a tentative main thoroughfare system and suggested park and parkway scheme. (Apply to the Commission.)

The Municipal Index for 1928.—Published by American City Magazine Corporation, New York. 719 pp. $5.00.

The latest edition of this well-established yearbook of municipal and civic progress and information presents much material not heretofore published in The Municipal Index or in THE AMERICAN CITY. Important lists of officials and facilities have been revised, and new ones added—State and County Engineers, City Engineers, City Planning Boards and Commissions, Bureaus of Municipal Research and Taxpayers' Associations, Real Estate Boards, State Chambers of Commerce and Development Associations, Airports and Landing Fields, Motor Clubs and Associations, Local Safety Councils, and Community Chests and Federations. Legal decisions reported in THE AMERICAN CITY during the years 1924-1927 are classified, each with its title. The progress in municipal government and in city planning is recorded by the same authorities as in previous volumes. The atlas feature is continued, and the bibliographical lists cover several hundred subjects. The names and addresses of consultants in all the fields of professional service for municipalities are included, and 424 pages of condensed catalogs of manufacturers of municipal equipment and supplies form the most comprehensive source of information for municipal and county buyers that has ever been available.

Among the distinctive articles in this volume are "A Model Accounting System for Municipalities," by Francis Oakey, C. P. A.; "Means of Reducing Traffic Accidents and Street Congestion," by E. P. Goodrich, Consulting Engineer; "Garbage, Ashes and Rubbish—Collection and Disposal," by H. Burdett Cleveland, Consulting Sanitary Engineer; "The Snow Removal Problem," by V. R. Burton, Engineer, Research and Statistics, Michigan Highway Department; "Codification of Municipal Ordinances," by Earle Gill, Consulting Counsel on Municipal Corporations, with a list of available model ordinances; "Sewers and Sewerage Systems," by George W. Fuller, Consulting Engineer; "Sewerage Treatment—A Review," by Langdon Pearse, Sanitary Engineer, The Sanitary District of Chicago; articles on Street Cleaning in Chicago, Denver, and Philadelphia, by the officials in charge, respectively; "Sanitary Hazards—Source to Consumer," an article on water-supply problems, by E. Sherman Chase, of Metcalf & Eddy, Consulting Engineers; reports on Street and Highway Lighting, and Public Regulation and Operation of Public Utilities. The statistics given include street construction, outdoor municipal swimming pools, fire losses, powerplants and their equipment, motor truck maintenance, and city finances.

South African Municipal Year Book, 1927-1928.—Complete official data, including an index to municipalities; comparative statistics of all municipalities; comparative statistics relating to 30 selected municipalities and detailed reports on municipalities by provinces. Public services are shown in statistical tables under such heads as light and power, tramway undertakings, engineering data, water-supply, fire protection, libraries and motor transport. 509 pp. 25s. net. (Apply to Edw. G. Allen and Son, Ltd., 12-14 Grape Street, London; or J. C. Juta and Co., Capetown and Johannesburg, South Africa.)

Organization and Operation of a Municipal Bureau of Fire Prevention.—A booklet of 166 pp., by Harold A. Stone and Gilbert E. Stecher, published by the School of Citizenship and Public Affairs, Syracuse University. It states the problem of effective fire prevention in the United States, and sets forth the mode of organization and the functions of a fire prevention bureau within the fire department, as the best solution. A portion is excerpted at pp. 161 and 163 of this issue. $1.00. (Apply to the School, Syracuse, N. Y.).

INTERNATIONAL

International Trucks are built in ¾, 1¼, 1½, 2, 2½, 3½, and 5-ton capacities. Wheelbase lengths and body equipment for every class of work. McCormick-Deering Industrial Tractors for road making and maintaining and other heavy-duty work.

AT LEFT: An International Speed Dump Truck up in the clouds on the Grouse Mountain Highway near Vancouver, B. C. Up and back, up and back, from sea level to mountain top—that is the daily work of this sturdy Speed Truck.

Heavy-Duty Builders

INTERNATIONAL TRUCKS are working at the mighty job of road making in Canada as well as in the United States—and all over the world. Speed trucks, double-reduction drive trucks, and chain drive trucks—all built especially for the various classes of important work into which they are sold.

The Quebec Ministry of Roads has built up a big fleet of International Harvester Trucks and Tractors during the past half-dozen years. Many of these have figured recently in the almost gigantic task of pushing a new motor road through the untouched wilds of the Gaspe Peninsula. Good work done in such service is adding regularly to the Quebec fleet.

In the far west the owners of the Grouse Mountain Highway project, just outside of Vancouver, rely on International for the maintenance of the scenic highway running from 8 feet above sea level to the clouds. Heavy, hard work, demanding power aplenty and brakes that leave no room for doubt.

On both coasts, and all over the land that lies between, these good trucks and tractors are reducing haulage costs for Government road departments, municipalities, private contracting firms, and others. Ask us for information on International Harvester Equipment *for your own work.*

INTERNATIONAL HARVESTER COMPANY
606 So. Michigan Ave. of America (*Incorporated*) Chicago, Ill.

International Harvester Trucks and Tractors

McCORMICK-DEERING INDUSTRIAL TRACTORS

ROAD PATROL: One of a great variety of combinations of road maintenance machinery and the McCormick-Deering Industrial Tractor. Such equipment keeps good roads good, at low cost.

STREET FLUSHING: The McCormick-Deering Industrial Tractor furnishes economical power for the operation of street flushers, snow plows, pushers, scarifiers, rollers, etc.

MATERIALS HANDLING: The McCormick-Deering Industrial Tractor is built into many types of equipment especially for municipal work. Shown here built into a big gravel shovel.

Central Park—History and Design.—Volume II of "Forty Years of Landscape Architecture: Professional Papers of Frederick Law Olmsted, Senior." Edited by Frederick Law Olmsted, Jr., and Theodora Kimball. Illustrated. G. P. Putnam's Sons, New York. 1928. 575 pp. $7.50.

This is an important publication from two points of view. It constitutes a history of one of the greatest pioneering works in American civic design and at the same time of a great municipal enterprise which was revolutionary both in character and scope. The work falls into two major divisions. The first is a connected account in narrative form of the park in its administrative, political, artistic and cultural aspects from its inception early in the 50's to the 80's, when the founders withdrew from active association in the enterprise. This is given with appropriate backgrounds of American and European movements, with much contemporary discussion, and with extensive direct quotations from Mr. Olmsted's papers. Part II is a carefully edited and arranged compilation of selected papers of Olmsted and Vaux relating to the park.

In Chapter XII, "The Influence of the Park on American Life," a vivid picture is created of that not very remote time when the idea of public pleasure grounds open to all alike connoted in the public mind riotous and licentious conduct. Chapter XIII, "The Park in Relation to the City Plan," rounds out the story to date.

It is a matter of note that recently revived activities to restore the park are in line with the original policies of the founders, which were followed out till the 80's, when the "progressive decline" began which has been going on since that time.

By-Pass Highways for Traffic Relief.—A report of the Highway Committee of the Regional Planning Federation, Philadelphia Tri-State District. It discusses a typical traffic problem of metropolitan sections; that is, ways of getting past the principal cities of the region without going through their congested centers, and of getting from one part of suburban territory to another without going into cities and out again. A "partial solution" is presented. A beautifully made booklet, 9 x 12 inches. 16 pp. 50 cents. (Apply to the Committee, Fox Building, Philadelphia, Pa.)

Public Affairs in Cleveland.—Cleveland's Welfare Department is doing a thoroughly good job in taking care of the nearly 3,000 wards entrusted to its care. Its sound administration and high morale under the competent direction of Dudley S. Blossom parallels the efficiency of Cleveland's Metropolitan Park System, which is growing in area and constantly proving a greater public asset. The major portions of *Greater Cleveland*, the bulletin of the Citizens' League, issues of January 25 and February 15, are devoted to detailed reports and financial statistics concerning these two departments. Of particular interest is the map (in the latter) showing present park reservation acreages and the projected plan. (Apply to the League, 1307 Swetland Building, Cleveland, Ohio.)

The Councils of the Chamber of Commerce of Pittsburgh, Pa.—The purposes of the Chamber of Commerce Councils in Pittsburgh, the scope of interests comprehended in these Councils, and specific programs of an Architects' Council, an Automotive Council, Builders' Council, Building and Loan Council, and so on through the alphabet of professional and trade interests;—these are set forth in the program of the Entertainment and Good Fellowship Dinner recently held in Pittsburgh. This program is also an annual report of progress in the different Councils. (Apply to Chamber of Commerce, Pittsburgh, Pa.)

New Legal Aspects of Zoning.—By Alfred Bettman. A brochure of 22 pages, reprinted from Annals of Real Estate Practice, 1927, classifying the legal aspects of zoning and the influence upon them of certain important court decisions and other developments. (Apply to the author, First National Bank Building, Cincinnati, Ohio.)

Uniform Building Code, 1927 Edition.—Official standards prepared and officially adopted by Pacific Coast Building Officials Conference. 256 pp. (Apply to Conference, 19 Pine Avenue, Long Beach, Calif.)

An Account of Real Estate Subdivisions.—Beverly Hills is a de luxe suburb of Asheville, N. C.; Westwood is a community of completed homes of moderate price in the northwest section of Chicago; Queen Anne Park, one of Seattle's seven subdivisions, is located on an eminence overlooking the city; Avondale Estates, Atlanta, Ga., is a home suburb with a community club, well-organized recreational facilities, and "everything to make the section a good place to live permanently"; Northampton is a successful St. Louis development; Avalon is a 56-acre subdivision of Cincinnati; Stewart Manor, "a community of homes," is 18 miles from New York City, on Long Island; Cleveland Park Terrace and Cleveland Hill lie in and just outside Buffalo, the latter comprising the highest in the city; and Leimert Park, a 230-acre development, is only 25 miles from the center of Los Angeles. The *Concrete Highways and Public Improvements Magazine* for February is devoted to a description of the concrete highways and other improvements in these. (Apply to the magazine, 33 West Grand Avenue, Chicago, Ill.)

Where Shall They Park?—Studies made during 24 community surveys undertaken by the National Safety Council clearly indicated the hazards of certain parking practices. In recommending the discontinuance of these practices, the Council carefully considered necessary measures for compensating for the reduction, enlisting the cooperation of managers of community safety councils, merchants in retail business districts and others. While the discussion is concerned with the safety aspects of parking, other aspects are considered also. General conclusions are listed under 10 heads. Free to municipal officials; otherwise, 25 cents per copy, special rates on lot orders. (Apply to the Council, 108 East Ohio Street, Chicago, Ill.)

The Administration of the Gasoline Tax in the United States.—Publication No. 7 of the Municipal Administration Service, by F. G. Crawford, Professor of Political Science, School of Citizenship and Public Affairs, Syracuse University. An account of the history, yield, collection, distribution and other aspects of the gasoline tax, now used by 46 states and the District of Columbia. Its constitutionality is also considered. Of special interest is the matter of apportionment to localities. 28 pp. 25 cents. (Apply to the Service, 261 Broadway, New York.)

The Gasoline Tax Movement.—Various printed memoranda and charts relating to this subject, issued by the Vermont State Chamber of Commerce; one dated January 1, 1928, gives the various rates then in force, ranging from 1 cent to 5 cents, and indicates a general upward trend. (Apply to the State Chamber, St. Albans, Vt.)

Civil Service Law and Practice for Municipal Civil Service Commissions in New York State.—A handbook of 106 pp. covering all phases of the subject. Includes a list of citations to legal cases of interest in connection with the text, and sample registration and record forms. Compiled by Eldred Johnstone and published by the New York State Department of Civil Service, January, 1928. (Apply to J. B. Lyon Co., Albany, N. Y.)

Municipal Licensing Power.—By Thomas A. Matthews, Attorney. This is Bulletin 26, Legal Division, Illinois Municipal League (January, 1928), covering every department of the subject under the laws and according to practices current in that state. (Apply to the League, Urbana, Ill.)

Partial Analysis of the Municipal Financial Problems of the Town of Norwood, Mass.; What Is Our Pay-As-You-Go Policy?—Two publications. The first is a 40-page booklet prepared by C. J. Prescott, Financial Commissioner, with figures and charts to cover the 15-year period, 1912-1927, concerning all municipal expenditures. The second is the Financial Commissioner's presentation, in concise, descriptive form, of the Norwood financial policy, as given in an address before the local Chamber of Commerce in January. 3 mimeographed pp. (Apply to the Commissioner.)

The Public School Community Library.—By Edward L. Burchard. A 6-page reprint from *Social Forces*, Vol. VI, No. 2, describing a new way of "neighborhood democratic life" being worked out by public librarians, with reports of experiences in various cities. (Apply to the author, 1415 East 57th Street, Chicago, Ill.

The Oxygen Demand of Polluted Waters.—Bulletin No. 173 of the United States Public Health Service, by Chemist Emery J. Theriault of the Service. This 185-page booklet is divided into two parts, the first being a critical review of existing literature on the subject, with an 8-page bibliography, while the second part describes and discusses a series of experiments, chiefly on Ohio River water, to study the rate of deoxygenation at varying temperatures and over periods of time considerably longer than have hitherto been continuously followed. There is a brief preface by Earle B. Phelps, advocating greater standardization in the terminology of the subject. July, 1927. 25 cents. (Apply to Government Printing Office, Washington, D. C.)

The Daniel Guggenheim Fund for Promotion of Aeronautics.—The first report of this foundation, covering the years 1926-1927, has been issued by Harry F. Guggenheim, President, and is available in bound form. 24 pp. (Apply to the Fund, 598 Madison Avenue, New York.).

Twentieth National Conference on Weights and Measures.—Proceedings of this conference include reports from state commissioners of weights and measures, and papers and discussions on a wide variety of interests coming within the scope of such officials' interests. Important amendments to the Model Law on Weights and Measures were also adopted. 138 pp. 45 cents. (Apply to Government Printing Office, Washington, D. C.)

Standard Recommendations for the Relief and Prevention of Unemployment.—A 6-page folder issued by the American Association for Labor Legislation, 131 East 23rd Street, New York, constituting a program of action, with such sub-topics as "Organization," "Education," "Emergency Relief," "Employment Bureaus," "Public Work," and "Unemployment Compensation." Brief bibliography. (Apply to the Association.)

Telephone Rates in Minnesota.—The Minnesota League of Municipalities has compiled rates for water, electricity, gas, and heat in municipalities of that state. Now, for the first time, it issues a schedule of telephone rates, and anticipates annual supplements to keep the information up to date. 11 pp. in *Minnesota Municipalities*, February, 1928. (Apply to the League, Minneapolis.)

Paving the Way to Greater Buffalo.—A study and recommendations for street and road improvements looking to the expansion of the city into a greater metropolitan area of Erie County. Illustrated with photographs, charts and diagrams. Study and report made by George C. Diehl and issued by the Automobile Club of Buffalo (N. Y.). 22 pp. (Apply to the Club.)

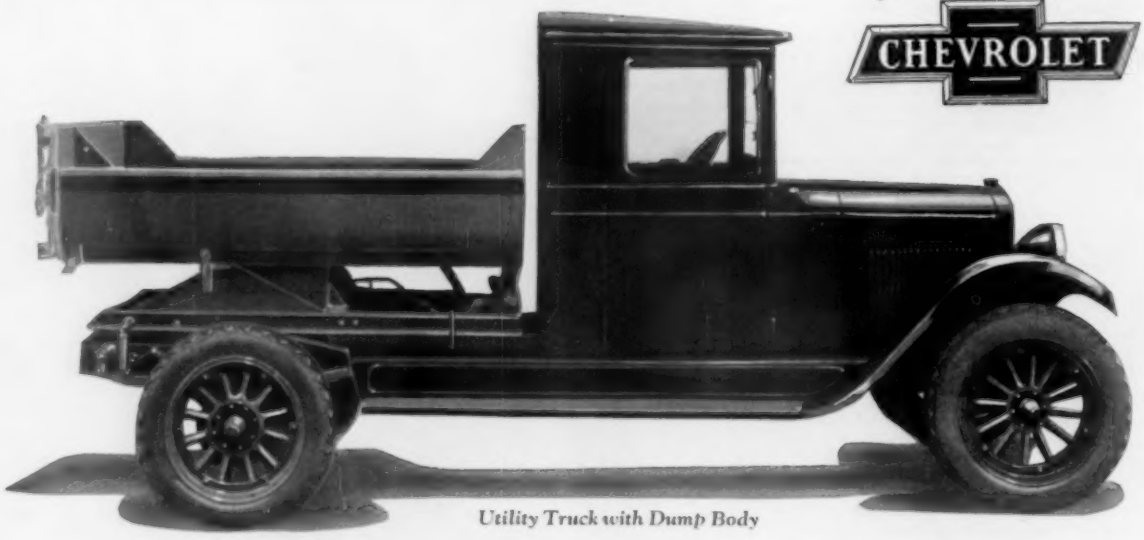
Tendencies in State and Local Finance and Their Relation to State and Local Functions.—"Volumes have been written concerning the proper division of functions between central and local governments, but the important part played by the revenue system in determining such division has received scarcely more than passing comment." Thus Mabel Newcomer prefaces this excellent analysis which comprises the first 30 pages of the *Political Science Quarterly*, issue of March, 1928. Numerous tables. (Apply to the *Quarterly*, Columbia University, New York.)

The Legal Control of Acts of the Municipal Authorities in Germany.—By Doctor Mitzlaff. A 13-page article written by request for the *Georgetown Law Journal* and appearing in its issue of February, 1928. It is interesting because (in Prussia, where the discussion is centered) "the actual, communal, self-administering corporate bodies are and remain the cities and villages . . . " and because "the municipalities discharge not only certain duties assigned to them by law but, in addition, each municipality is entitled, without further ceremony, to take in hand any duty which it chooses." This is the antithesis of English communal law and outstandingly in contrast with American municipal law. 65 cents. (Apply to the *Journal*, Washington, D. C.)

The Taxpayers' Dollar.—Its distribution in Louisville, Ky., shown chiefly in charts and tables. Issued by the Mayor, W. B. Harrison, for the information of the public as to the city's financial administration. The city's spending program for 1928 is appended. (Apply to the Mayor.)

for Economical Transportation

CHEVROLET



Utility Truck with Dump Body

Proved Dependability and Economy for Municipalities

UTILITY TRUCK

$495

(*Chassis only*)
f. o. b. Flint, Mich.

This price now includes 30 x 5 balloon tires on all four wheels.

Also
Light Delivery

$375

(*Chassis only*)
f. o. b. Flint, Mich.

The outstanding dependability and economy of Chevrolet trucks have been proved by millions of miles of testing on the roads of the General Motors Proving Ground—and by millions of miles of usage in the hands of owners in every line of business!

Fast, rugged and dependable . . . and amazingly economical in their consumption of gasoline and oil—Chevrolet trucks have repeatedly demonstrated their ability to provide the world's lowest ton-mile cost. Cities and towns all over the country have learned by actual experience that Chevrolet trucks meet their strenuous needs perfectly—and with outstanding economy.

Your Chevrolet dealer can provide a body type designed especially for your needs. See him today and arrange for a trial-load demonstration.

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN
Division of General Motors Corporation

The General Motors Proving Ground

Comprising a tract of 1245 acres, the General Motors Proving Ground at Milford, Mich., is the greatest outdoor laboratory ever devised for testing and proving automotive products.

Government and Business.—By Earl Willis Crecraft, Ph.D., Professor of Political Science, University of Akron. World Book Co, Yonkers, N. Y. 1928. 508 pp. $2.96.

The city is a most intensive laboratory where the daily processes of government deal with the personal life of the citizen and to a large extent with his business affairs, particularly those of a work-a-day sort. Therefore a study of the relationships of business and government is of much importance to citizen, city administrator and municipal legislator, even though it be also concerned to a large degree with the state and national governments. Professor Crecraft presents here such a study, which takes up various forms of activity of government and their meaning to business, in a broad sense of the latter, and, correlatively, it discusses the larger divisions of business activity—banking, credit, marketing, transportation, etc.—and their governmental relations. The inherently close connection between these two large concepts is stressed.

Public Utility Rates.—A 203-page compilation of the rates for electric light and power, water and gas in the cities of Kansas compiled and published by the League of Kansas Municipalities. Of the 561 cities in the three classes recognized in that state, 538 are supplied with one or more of the above services; 534 have electric service, with municipal distribution in 232 cities, 90 of which have municipal generating plants, and distribution by companies in 302 cities, in 42 of which the companies have generating plants; 283 cities have water systems, 276 being municipal and 7 privately owned; 100 have gas service, municipal in 7 instances and private in 93; 23 unincorporated villages supplied with gas by companies are also included. Besides rates, certain data on plant, customers and finances are given. Various short articles on municipal utility administration, accounting and rate-making are included, and a large folded electric light and power service map, showing the cities and transmission lines, with kind of ownership, is furnished with each book. January 1, 1928. $10.00. Three copies for $25.00, postpaid. (Apply to the League, Lawrence, Kans.)

Annual Report, County of Los Angeles, Calif. — All financial transactions of the county for the fiscal year ending June 30, 1927, are shown in this voluminous and attractively made volume of 320 pages, illustrated. Receipts and expenditures of each county office, board, commission, institution, court, or county or school district, are shown in detail, with certain improvement schemes featured and illustrated. (Apply to the Board of Supervisors, Los Angeles.)

Voting on the Voting Machine.—When Cuyahoga County, Ohio, tried to adopt voting machines in 1909, their use was held unconstitutional. A constitutional amendment authorizing their use was lost in 1912. In the 1927 session, a bill to amend the constitution for this purpose was not passed, the City Commission asking for a decision from its legal director instead of submitting the matter to the people. The director held that the proposed amendment was unconstitutional and that the Commission could not be required to submit it to a vote. The amendment must be adopted before its constitutionality could be passed upon by the Supreme Court, to which the controversy was finally submitted. An election will be held on April 24. The March 8 issue of *Greater Cleveland* contains a brief review of the case with arguments pro and con. (Apply to Citizens League, Cleveland, Ohio.)

Current Literature on Casualty Insurance and Suretyship.—A bulletin issued by the National Bureau of Casualty and Surety Underwriters, January, 1928. Constitutes an index to books, pamphlets, and articles in periodicals bearing upon the above and related subjects. 15 pp. 65 cents. (Apply to the Bureau, 1 Park Avenue, New York.)

Michigan Municipal Review.—Volume 1, No. 1 of the official organ of the League of Michigan Municipalities, under date of January, 1928, contains a variety of valuable and well-organized material from the fields of municipal news and opinion. The articles include "Science in Government," by Lent D. Upson; and "A General Review of the Municipal Tax Problem," by Ganson Taggart, City Attorney, Grand Rapids. 25 cents. (Apply to the League, Ann Arbor, Mich.)

Plumbing.—By Harold E. Babbitt, Professor of Sanitary Engineering, University of Illinois. McGraw-Hill Book Co., Inc., New York. 1928. 455 pp. $5.00.

In preparing the plumbing code recently sponsored by the Illinois State Department of Public Health and recommended for adoption by Illinois municipalities, Professor Babbitt felt the need of a new and complete text on plumbing, the result being the present volume, which is intended for architects, master plumbers, engineers, plumbing inspectors and others. It embodies the results of extensive research at the Engineering Experiment Station of the University of Illinois and at the United States Bureau of Standards, the latter having appeared in the so-called Hoover Report on "Recommended Minimum Requirements for Plumbing in Dwellings and Similar Buildings." The book should be of much value to building departments and building-code committees. There are many illustrations and tables.

Administrative Consolidation in State Governments.—By A. E. Buck, National Institute of Public Administration. This is a fourth and revised edition, first printed in 1919, bringing the history of this important subject up to date. It contains sections on (I) "What and Why of Administrative Consolidation"; (II) "Consolidation Plans in Operation"; (III) "Proposed Consolidation Plans" and an extensive selected bibliography. It is Technical Pamphlet Series No. 2, issued by the National Municipal League, 261 Broadway, New York. 35 cents. (Apply to the League.)

Legal Aid Study.—The Report of the Joint Committee for the Study of Legal Aid of the Association of the Bar of the City of New York and the Welfare Council of New York City (1928) is a volume of 156 pp. divided into four principal parts: Part I gives the origin, methods of organization, and objectives of Legal Aid Study; Part II is a voluminous analysis of the present situation, including organized and unorganized legal aid and their relation to other social work; Part III consists of "Recommendations for Improvements"; and Part IV is "Suggestions for Carrying Out Recommendations." Suggested forms for records and questionnaires appended. (Apply to W. Bruce Cobb, Director, Brooklyn Charity Society, Brooklyn, N. Y.)

"The National Committee for Restriction of Outdoor Advertising.—What It Is and What It Seeks to Do" is the title of a three-fold leaflet just issued from this organization's headquarters at 119 East 19th Street, New York. This leaflet has valuable information for civic clubs, women's clubs, and other community organizations whose programs the Committee can help to broaden. "Regulate the Rural Billboard"; and "Why Not Tax the Rural Billboard!", two other leaflets just issued, give recommended procedure for dealing with a flagrant offender, and legal justification for this procedure. (Apply to the Committee.)

The Twentieth Annual Meeting of the Assembly of Civil Service Commissions.—Complete proceedings of the September, 1927, meeting, Buffalo, N. Y., consisting mainly of round-table discussions of "the every-day work of administering the merit system." The Assembly expresses the wish that the publication may "stimulate the general public to a much-needed interest in the personnel problems of government." (Apply to Charles S. Shaughnessy, Secretary, Civil Service Commission, Philadelphia, Pa.

Income and Expense of Local Government.—A 4-page article in *Pennsylvania Progress*, the bulletin of the Pennsylvania State Chamber of Commerce, February, 1928, in which Dr. F. L. Olsen, of the Pittsburgh Bureau of Governmental Research, gives practical suggestions for local chambers wishing to assume intelligent leadership in the study of governmental finance, and the creation of intelligent public opinion looking to more efficient control of public financial affairs.

Festival Book of May Day: Child Health Day.—Containing interesting, informative and amusing material, with a variety of suggestions for May Day Programs by different community groups, and a bibliography. 80 pp., with photographic illustrations and page decorations. 10 cents. (Apply to American Child Health Association, 370 Seventh Avenue, New York.)

Automobile Green Book.—Volume Two. Scarborough Motor Guide Company, Boston, Mass. 1928. 1,028 pp. $3.00.

This new edition of a valuable Road Reference and Tourists' Guide contributes to the convenience and safety of the tourist public. It covers the federal and state highway systems in New York, New Jersey, Pennsylvania, Maryland and Delaware and the Central, South Atlantic and Gulf States, with trunk lines in New England and eastern Canada. The text matter and the maps make it possible to be guided either by pole markings or by detailed instructions. The trunk line charts, the detailed sectional maps, and the city maps together make a complete guide. The volume includes a Golf Club Guide, ferry schedules and an abstract of automobile laws.

The Geodetic and Topographic Survey of Columbus, Ohio.—A substantial volume in pasteboard binding made by the Department of Public Service, Division of Engineering and Construction, R. H. Randall, Engineer of the Survey. In two parts. The first has an introduction explaining the schedule and organization of the surveys, the geodetic and the topographic surveys themselves, with descriptions of the specifications, etc. Part two tabulates results. Illustrations, charts, and maps. This report is similar in scope and presentation to the admirable Greensboro (N. C.) survey made under direction of the same survey engineer, see page 555, THE AMERICAN CITY, October, 1927. (Apply to Division Engineering and Construction, Department of Public Service, Columbus, Ohio.)

Salaries of High School Principals and City Superintendents of Schools in Wisconsin Cities.—Compiled by Lorna L. Lewis from official reports for the year 1926-1927 to supply more recent data than are given in Report 47, issued February, 1926. 6 pp. mimeographed. Issued as report No. 63, Municipal Information Bureau, Extension Division, University of Wisconsin, Madison, Wis. (Apply to the Bureau.)

Cattaraugus County Health Demonstration Continues.—By Edward W. Sheldon, President, Milbank Memorial Fund. The initial article in the *Quarterly Bulletin* of the Milbank Memorial Fund (January, 1928) announces the continued participation of the Fund during 1928 in the cooperative health work in Cattaraugus County, N. Y. The five demonstration years are considered to have proved to the people of the county the advantages of the county as the unit of health administration; and have yielded experience believed valuable to public health administration in general. Information has been generally disseminated. Some of it has been applied elsewhere. But greater values are to be realized, it is believed, by the Fund's continued participation. (Apply to the Fund, 49 Wall Street, New York.)

The Newer Justice and the Courts.—The National Probation Association is working for just and effective treatment of delinquency and its prevention. The complete proceedings of the 1927 conference afford a record of improved probation and social court work which is largely a record of the coming of a more humanized attitude towards young offenders, particularly first offenders. The papers are grouped under heads including such subjects as: "State Control of Probation"; "The Family in Court"; "Crime"; and "The Police." A summary is given of all laws and court decisions affecting juvenile courts and adult probation during the year. 308 pp. Paper-bound. $1.00. Apply to the Association, 370 Seventh Avenue, New York.

Industrial Survey of Rutland, Vermont.—An exceptionally comprehensive study of 138 pages, illustrated, issued by the city of Rutland under direction of the Chamber of Commerce. Analyses present industrial development, natural resources, labor conditions and utilities development. Explains government and financial organization of the city, and gives details of educational, cultural, and recreational advantages. (Apply to the Chamber of Commerce.)

Handbook for Town Officers.—Designed to aid town officers of New York State in the establishment of sound financial and accounting systems according to statutory requirements of the state. Revised to January, 1928. (Apply to M. S. Tremaine, Comptroller of State of New York, Albany, N. Y.)

News for every truck user

New Wheel Bases

Now there are THIRTEEN new Speed Wagon Chassis—with wheelbases ranging from 115 to 175 inches—capacities from ½ ton to 3 tons—and with an average of TWO standard body types for each model.

New 4-Wheel Brakes

Hydraulic—not mechanical. Internal expanding—not external contracting. Always in adjustment, no cables to stretch, no rods to bend. Equal to every job, no matter how heavy the load. Protected against dirt and moisture—they stop you in any weather on any road, in reverse or going forward. These brakes are on ALL the new Speed Wagons—and in addition there is the independent hand lever brake operating on the propellor shaft.

New Low Prices

Here are price reductions ranging up to $260 that put Speed Wagon values even further in advance of anything else on the market today:

	Capacity	Wheelbase	Chassis Prices at Lansing
JUNIOR	½ Ton	115″	$ 895
TONNER	1 Ton	123″	995
TONNER	1 Ton	138″	1,075
STANDARD	1½ Ton	133″	1,245
STANDARD	1½ Ton	148″	1,345
GENERAL UTILITY	1½ Ton	143″	1,345
LIGHT BUS	12 Passenger	143″	1,405
MASTER	2 Ton	148″	1,545
MASTER	2 Ton	164″	1,645
HEAVY DUTY	3 Ton	159″	1,985
HEAVY DUTY DUMP	2 Cu. Yd.	130″	1,935
175″ COMMERCIAL	3 Ton	175″	2,090
175″ BUS	21 Passenger	175″	2,150

REO MOTOR CAR COMPANY, *Lansing, Michigan*

SPEED WAGON

powered with six-cylinder motors

Public Beach Operation.—Tabulation of Replies to a Questionnaire.—Compiled by George Hjelte, Superintendent, Department of Playground and Recreation, Los Angeles, Calif. Occupies the central double-page space in *The Playground* for February, 1928. Covers ownership and control; facilities; regulations, and finance. 25 cents. (Apply to *The Playground*, 315 Fourth Avenue, New York.)

Zoning in Providence, R. I.—How hazards have decreased and property values tended to greater stability since the adoption of zoning in Providence, and how the general appearance of the city has improved, are described by Achille Mangiante, Secretary of the Zoning Board of Review of that city. Reprints of an article in Providence newspapers available. (Apply to the Secretary of the Board, City Hall, Providence, R. I.)

The Setback Line Defended.—*The Plan-It*, Bulletin of the Portland, Ore., City Planning Commission, issue of February, 1928, meets criticisms of the setback lines recommended in the Major Traffic Street Report and urges the soundness of planning for the future as well as for present requirements, quoting experiences of American and European cities. (Apply to the Commission, City Hall, Portland, Ore.)

City Planning and Zoning Accomplishments.—A report compiled by the Civic Development Department, United States Chamber of Commerce. Seven mimeographed pp., with a supplement of 90 tables showing actual status of planning and zoning by cities. The report discusses "The New Era in Civic Development," and defines the missions of city planning and of zoning in this era. See page 110, this issue. 15. (Apply to the Chamber, Washington, D. C.

Other Reports Received

Burlington, N. C.—Chamber of Commerce Industrial Prospectus. 16 pp.

Detroit, Mich.—Annual Report, Department of Health, 1927. 56 pp.

Oberlin, Ohio—Annual Village Report, 1927. 36 pp.

The Oranges and Maplewood, N. J.—Annual Report, Chamber of Commerce, January 31, 1928.

Pasadena, Calif.—Annual Report of Comptroller of Accounts, June 30, 1927. 51 pp.

Salem, Mass.—Annual Report, Park Department, 1927. 33 pp.

San Jose, Calif.—Annual Report, Health Department, 1927. 42 pp.

Springfield, Vt.—Eighth Annual City Manager Report, February 1, 1928. 64 pp.

West Vancouver, B. C.—Financial Statement, 1927. 24 pp.

CONVENTIONS—WHEN AND WHERE

April 3-4.—Orlando, Fla.
American Water Works Association, Florida Section. Annual meeting. Secretary, E. L. Filby, State Board of Health, Jacksonville, Fla.

April 9.—New York.
National Committee on Prisons and Prison Labor. Annual meeting. Secretary, Miss Julia K. Jaffray, 4 West 57th Street, New York.

April 12.—Goldsboro, N. C.
Eastern Carolina Chamber of Commerce. Annual meeting. Secretary, N. G. Bartlett, Kinston, N. C.

April 15-17.—Ocala, Fla.
Florida Commercial Secretaries Association. Annual convention. Secretary-Treasurer, A. A. Coult, Chamber of Commerce, Fort Meyers, Fla.

April 17-19.—Atlanta, Ga.
Southeastern Water and Light Association. Annual convention. Secretary, W. F. Stieglitz, Columbia, S. C.

April 23-25.—Kansas City, Mo.
Central States Safety Congress. Annual meeting. Address: National Safety Council, 168 North Michigan Avenue, Chicago, Ill.

April 30.—Pinehurst, N. C.
North Carolina Public Health Association. Annual meeting. Secretary, Dr. F. M. Register, Bureau of Vital Statistics, Raleigh, N. C.

April 30-May 1.—Memphis, Tenn.
National Probation Association. Annual convention. General Secretary, Charles L. Chute, 370 Seventh Avenue, New York.

April 30-May 2.—Memphis, Tenn.
International Association of Policewomen. Annual meeting. President, Mrs. Mina C. Van Winkle, Washington, 220 Evening Star Building, Washington, D. C.

May 2-9.—Memphis, Tenn.
Association of Community Chests and Councils. Annual meeting. Executive Director, Allen T. Burns, Graybar Building, 43d Street and Lexington Avenue, New York.

May 2-9.—Memphis, Tenn.
National Conference of Social Work. Annual conference. Secretary, Howard R. Knight, 277 Long Street, Columbus, Ohio.

May 7-8—Denton, Texas.
League of Texas Municipalities. Annual convention. Executive Secretary, Harvey W. Draper, 815 Capitol Avenue, Houston, Texas.

May 7-10.—Dallas, Texas.
National Conference on City Planning. Annual conference. Secretary, Flavel Shurtleff, 130 East 22d Street, New York.

May 9.—Washington D. C.
National Association of Commercial Organization Secretaries. Mid-year meeting. Secretary-Treasurer, A. S. Dudley, Sacramento, Calif.

May 10-11.—Wichita, Kans.
National Airways Marking Convention. Address Geo. H. Sawellesh, Wichita Chamber of Commerce.

May 14-17.—Pittsburgh, Pa.
American Society of Mechanical Engineers. Spring meeting. Secretary, Calvin W. Rice, 29 West 39th Street, New York.

May 16-17.—Fort Wayne, Ind.
Indiana Association of Chiefs of Police. Annual meeting. Secretary-Treasurer, A. G. Ebersole, Superintendent of Police, Lafayette, Ind.

May 16-18.—Washington, D. C.
American Association of Museums. Annual meeting. Executive Secretary, Lawrence Vail Coleman, Smithsonian Institution, Washington, D. C.

May 16-18.—St. Louis, Mo.
American Institute of Architects. Annual convention. Executive Secretary, E. C. Kemper, The Octagon, Washington, D. C.

May 17-19.—Atlanta, Ga.
International Association of Comptrollers and Accounting Officers. Annual convention. Secretary, Mark M. Foote, City Comptroller's Office, Chicago, Ill.

May 22-25.—Washington, D. C.
National Conference on Weights and Measures. Annual conference. Secretary, F. S. Holbrook, Bureau of Standards, Washington, D. C.

May 28-31.—Kansas City, Mo.
National Association of Purchasing Agents. Annual convention and Inform-A-Show. Secretary, W. L. Chandler, Woolworth Building, New York.

May 28-June 2.—West Baden, Ind.
American Library Association. Annual convention. Executive Secretary, Carl H. Milam, 86 Randolph Street, Chicago, Ill.

June 4-8.—Atlantic City, N. J.
National Electric Light Association. Annual convention and exhibition. Secretary, A. Jackson Marshall, 420 Lexington Avenue, New York.

June 4-9.—Louisville, Ky.
National Organization for Public Health Nursing. Biennial convention. General Director, Miss Jane C. Allen, 370 Seventh Avenue, New York.

June 5-7.—Troy, N. Y.
Conference of Mayors and Other City Officials of the State of New York. Annual meeting. Secretary, William P. Capes, City Hall, Albany, N. Y.

June 5-7.—Houston, Texas.
Chiefs of Police and City Marshals Association of Texas. Annual convention. Secretary, George A. Smith, P. O. Box 209, Dallas, Texas.

June 5-9.—Denver, Colo.
National Association of Public School Business Officials. Annual meeting. Secretary, John S. Mount, Inspector of Accounts, State Department of Education, Trenton, N. J.

June 8-9.—St. Paul, Minn.
Conference of State and Territorial Health Officers. Annual conference. Address: Surgeon General, U. S. Public Health Service, Treasury Department, Washington, D. C.

June 11-16.—San Francisco, Calif.
American Water Works Association. Annual convention. Secretary, Beekman C. Little, 170 Broadway, New York.

June 14-16.—Sterling, Colo.
Colorado Municipal League. Annual meeting. Secretary, Don C. Sowers, University of Colorado, Boulder, Colo.

June 15-16.—Burlington, Vt.
New England Association of Commercial Executives. Annual meeting. Secretary, Geo. F. Hines, Secretary, Chamber of Commerce, Haverhill, Mass.

June 18-20.—Fort Worth, Texas.
West Texas Chamber of Commerce. Annual meeting. General Manager, Homer D. Wade, Stamford, Texas.

June 20-22.—Denver, Colo.
American Association of Nurserymen. Annual convention. Executive Secretary, Charles Sizemore, P. O. Box 369, Louisiana, Mo.

June 23-29.—On Board S. S. "St. Lawrence" (Port of Montreal, Que.)
Union of the Municipalities of the Province of Quebec. Annual convention. Secretary-Treasurer, T. D. Bouchard, 130 Rue St. Jacques, Montreal, Que.

June 25-28.—Colorado Springs, Colo.
International Association of Chiefs of Police. Annual convention. Secretary, George Black, Chief of Police, Wilmington, Del.

June 26-29.—San Francisco, Calif.; and July 2.—Los Angeles, Calif.
National Conference on State Parks. Eighth national conference. Secretary, Beatrice M. Ward, 905 Union Trust Building, Washington, D. C.

June 26-29.—Burlington, Vt.
New England Association of Fire Chiefs. Annual convention. Secretary, Chief John W. O'Hearn, Watertown, Mass.

September 17-20.—Toronto, Ont.
Illuminating Engineering Society. Annual convention. General Secretary, L. H. Graves, 29 West 39th Street, New York.

September 18-20.—Asheville, N. C.
International City Managers Association, Annual convention. Executive Secretary, John G. Stutz, Lawrence, Kans.

October 1-5.—New York.
National Safety Council. Annual Safety Congress. Managing Director, W. H. Cameron, 108 East Ohio Street, Chicago, Ill.

October 1-5.—Atlantic City, N. J.
Playground and Recreation Association of America. Annual convention. Secretary, H. S. Braucher, 315 Fourth Avenue, New York.

October 5-9.—Seville, Spain.
International Congress of Local Officials (formerly International Federation of Local Government Association.) Fourth International Congress. Director, E. Vinck, Rue de la Regence, Brussels, Belgium.

October 15-18.—Dallas, Texas.
Southwest Water Works Association. Annual convention. Secretary, Louis A. Quigley, Fort Worth, Texas.

October 15-19.—Chicago, Ill.
American Public Health Association. Annual meeting. Secretary, Homer N. Calver, 370 Seventh Avenue, New York.

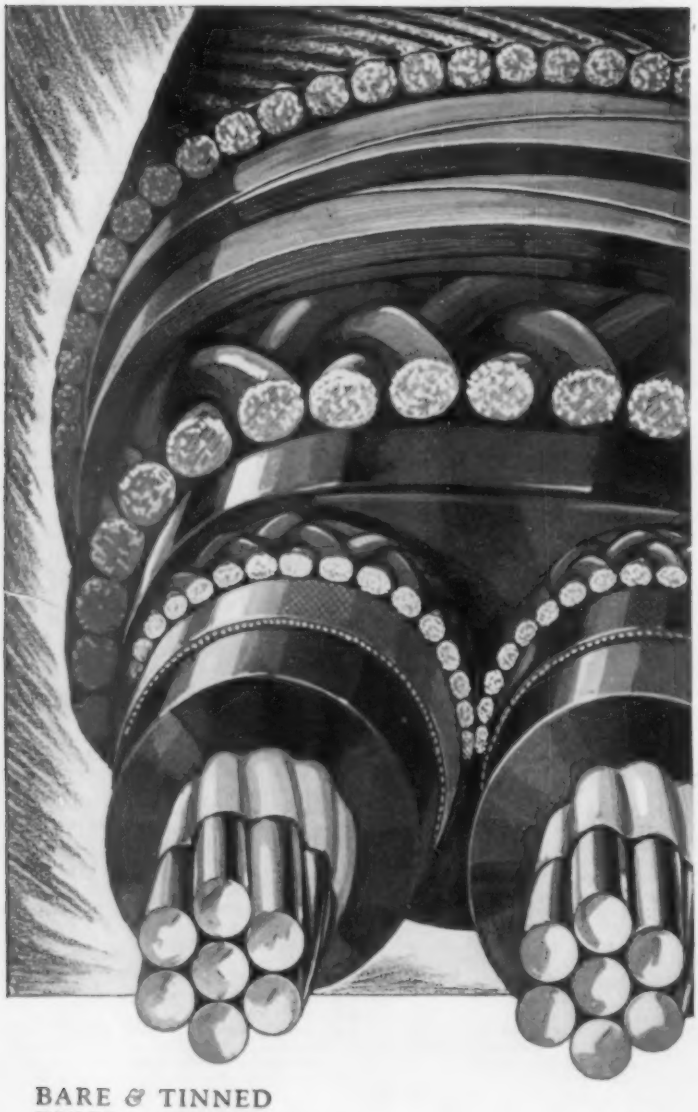
October 15-21.—Philadelphia, Pa.
International Association of Fire Chiefs. Annual convention. Secretary, James J. Mulcahey, Yonkers, N. Y.

October 16-17.—Cincinnati, Ohio.
National Municipal League. Annual convention. Secretary, H. W. Dodds, 261 Broadway, New York.

October 22-26.—Detroit, Mich.
American Society for Municipal Improvements. Annual convention. Address: E. A. Wood, City Engineer, Dallas, Texas (Chairman, Convention Arrangements Committee).

October 23-26.—New Orleans, La.
International Association of Municipal Electricians. Annual convention. Secretary, Harold N. Lang, Orlando, Fla.

Here's the new Trenchlay Cable – for parkway lighting and airports



THIS new cable—Trenchlay—will lower your parkway lighting and airport construction costs in many ways. It will keep the work that you would like to do within the limits of your budget.

Trenchlay saves money, first, in its initial cost. Second, in its freight charges—for it is exceptionally light. Third, in its installation costs, because it is much easier to handle and splice. Fourth, in its upkeep—for there is nothing in its whole construction to rust or corrode. Trenchlay is ageless, changeless.

Trenchlay is not a remodeling of an old type of cable. It is a fundamentally new construction which incorporates time-tried materials, built on basic engineering principles from the conductors out.

If you would like complete details we will gladly furnish them, or we would be happy to have one of our engineers call and discuss Trenchlay with you.

ROME WIRE COMPANY
DIVISION *of* GENERAL CABLE CORPORATION
Rome, New York

BARE & TINNED WIRES · · · POWER CABLES · MAGNET, WEATHERPROOF & RUBBER COVERED WIRES · · FLEXIBLE WIRES, CABLES & CORDS · · SIGNAL & TELEPHONE WIRES · · · LEAD & STEEL-TAPED CABLES · SUPER SERVICE CORDS & CABLES · ROMEX · · · SPECIAL WIRES to SPECIFICATIONS

ROME WIRE

2804

FROM WIRE BAR TO FINISHED COPPER WIRE

Yes—we should like you to mention THE AMERICAN CITY.

NEWS AND ILLUSTRATIONS

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

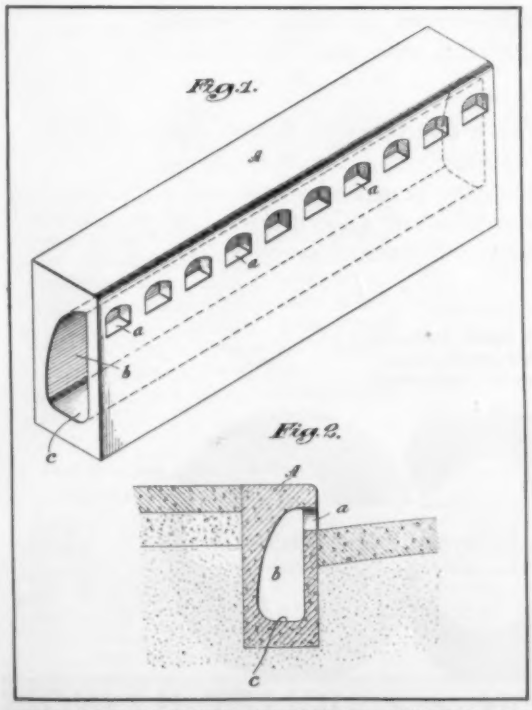
A Precast Concrete Curbstone and Drain

Something which is distinctly new and has obvious advantages has been recently developed by A. R. Von Keller, Fisk Building, New York, in a draining curbstone, which is precast and is made to be interchangeable with curbstones already laid.

The curbstone has a drain cast longitudinally through its entire length, and at short intervals small inlets at the elevation of the gutter. The curbstone is reinforced and when built in combination with steel curb guards will cost about the same as solidly cast curb.

The principal advantage of the drain curbstone is that it does away with unsightly refuse lying about the streets waiting to be picked up by the street sweeper and also does away with the unsightly and unhealthful openings of catch-basins at the corners of streets, into which much material is thrown that does not belong in the sewer system of any city. With the advent of motor traffic, practically all dust and dirt on the roadway is blown toward the side and can be flushed into the curbstone by a power flusher or hand hose.

The curbstone can readily be kept clean by occasionally inserting a bent nozzle hose into any one of the openings and flushing clear to the nearest catch-basin at the corner of the street. A great advantage is that after snowstorms it provides immediate drainage at very short intervals along the gutter when a thaw occurs, thus doing away with the rivulets which one sees now wherever the snow melts.



THE NEW DRAINING CURBSTONE, SHOWING THE SMALL INLETS AND MAIN DRAIN, AS WELL AS A SECTION INDICATING A PROPER SETTING

Speedy Election Returns

According to a letter received by the Automatic Registering Machine Co., Inc., Jamestown, N. Y., manufacturers of voting machines, from James T. Geddes and Wadsworth J. Zittel, Commissioners of Elections, Erie County, Buffalo, N. Y., on November 17, 1927, a recount for the office of mayor was held at the city of Tonawanda. Ten voting machines were opened and a new tally made which agreed exactly with the original returns filed by the inspectors of elections. The recount was completed within 15 minutes.

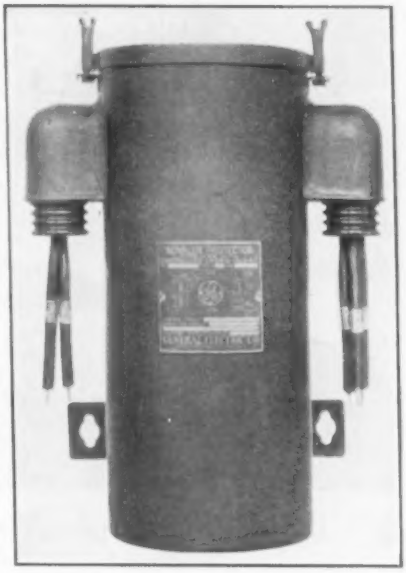
On November 18, a recount was held in the city of Buffalo for the office of district councilman, Lovejoy District. Thirty voting machines were opened and a new tally made which agreed exactly with the original returns filed by the inspectors of election. The recount was completed within 25 minutes.

On November 21 a recount was held in the town of Cheektowaga for the office of assessor. Ten voting machines were opened and a new tally made which agreed exactly with the original returns filed by the inspectors of election. The recount was completed within 15 minutes.

No additional expense was incurred and no further court action taken, whereas, if paper ballots had been used, it would have been a long-drawn-out and expensive proceeding.

An Electric Current Protector for Street Lighting

A new device, the Novalux protector, designed to disconnect the street-lighting transformer from the primary source of supply in case of an open circuit, has been developed by the General Electric Co., Schenectady, N. Y. This protector, bearing the designation N-1, is practically a safety first mechanism, and as such is valuable when open circuits are caused by trees or other obstructions. It is built to operate in conjunction with a Novalux controller, and its function is to open the switch in the controller as soon as the open circuit takes place.



THE NEW NOVALUX PROTECTOR FOR STREET-LIGHTING EQUIPMENT

The mechanism of the protector consists of two solenoids working in opposition with a common armature. One solenoid is energized by the controlling circuit, the other by the load circuit to be protected. Under normal conditions both coils are energized and the common armature remains in its lower position. However, when an open circuit occurs in the load circuit, the lower solenoid is de-energized and the armature rises instantly because of the overbalancing force of the upper solenoid. This movement of the armature closes a contact which de-energizes the controller.

After the "open" in the load circuit has been repaired, the protector can be reset (reconnecting the transformer to the main feeder system) by means of a push-rod conveniently located at the top of the protector. The protector may also be reset by flashing the control circuit.

The protector is housed in a weatherproof casing drawn from copper-bearing steel. The working parts are submerged in oil for insulating and damping.

This device is designed for use in either a multiple or a series control circuit, and a series protected circuit. The standard ratings are either 110 volts and 60 cycles for a multiple control circuit or 6.6 / 7.5 amperes for a series control circuit, with 6.6 / 7.5 amperes for the protected circuit.

Will you do it—★★★★—?

No line of equipment has ever held commercial supremacy whose sales have resulted from high pressure "word-selling." Products of leadership are invariably those in which the highest ideals of commercial value have been embodied in the forms of superior mechanical development—careful and painstaking workmanship—the employment of the best in material—and the constant supervision of the builder to develop and achieve the maximum in operating efficiency.

— * * * — ***Users of "street flushers—street sprinklers—road oilers" are asked to make every comparison with the TECO line of equipment.***

The high operating efficiency of TECO equipments is not due to any one feature *but a combination of many* and the correctness of their correlated design—all of which is the result of *engineering talent* of men whose ideas and finished units are known to thousands of municipal executives as equipments of proved service, long life, dependability and economy.

We suggest you ask for our latest bulletins. Our engineering department will gladly cooperate with you in designing special equipment.

TECO

Street Flushers / Street Sprinklers / Road Oilers / Special Equipment

TRUCK EQUIPMENT CORPORATION / / JOLIET, ILLINOIS

Clifford with National Tube

T. C. Clifford, who for the past twenty-five years has occupied the position of Sales Manager for the Pittsburgh Meter Co., is now associated with the sales department of the National Tube Co., with headquarters at their main office in Pittsburgh. In this position Mr. Clifford will pay particular attention to introducing and promoting the sale of Talbot lined steel pipe to the water-works officials throughout the United States.

The Talbot process of lining pipe with a bitumen compound, by a centrifugal process is well known in England, where it has been successfully used for several years, and it is now being introduced into the United States by the National Tube Co., which has secured the patent rights for this country. Mr. Clifford brings to his new position a wide acquaintance with the leading water-works officials of the country, and an intimate knowledge of the water-works industry.

Mr. Clifford has been associated with the industry for many years, and will, no doubt, receive a hearty welcome from his many friends in the water-works field.

A Pavement Core Drill

A self-contained pavement core drill that is used to take solid cores of approximately 6 inches diameter from concrete, brick or asphalt pavements, has been developed by the H. C. Nutting Co., Cincinnati, Ohio. Five of these drills have recently been delivered to the Cuban Government, and satisfactory results have been reported.

The drill can be mounted on a truck, wagon or trailer. Ample power is furnished the drill with an 11-horsepower, 4-cylinder Universal motor. The drill is equipped throughout with Timken roller bearings and Alemite lubrication. The bevel and spur gears used on the drill are so enclosed and encased that they run in oil.

The distinguishing feature of this unit is the fact that the drill spindle is mounted on a vertical slide of the milling table type construction. This feature keeps the drill spindle bearing always at the same distance from the point of work, that is, at the extreme end of the shot-bit. This prevents any wabbling of the shot or cutting bit, thus enabling the cores to be true right cylinders. These cylinders supply material for tests in checking the thickness of the pavement and in compression tests. The drill is built with the idea that it will be mounted on a 1½-ton truck.

A Lubricator for Vertical Shaft Centrifugal Pumps

An automatic oil economizer for automatically controlled vertical shaft centrifugal pumps, that lubricates only when the pump operates, has been developed by Yeomans Brothers Co., 1417 Dayton Street, Chicago, Ill. This device can easily be applied to pumps now in service, and constitutes an important factor of safety and reliability.

Probably 90 per cent of all vertical shaft centrifugal pumps installed for pumping sewage and drainage are equipped with automatic start and stop control, and in many of these installations the pumps may be idle for long periods of reduced inflow, this being especially true of reserve units arranged to cut in automatically under peak conditions only. Consequently, if the guide and thrust bearings of these pumps are supplied with oil from the ordinary sight feed lubricator, feeding it to the bearings when the pump is idle as well as when it is running, there will be a great waste of lubricant, and refilling of the oil containers will be required much more frequently than the duty of the pumps demands.

The oil economizer supples oil to bearings only when the pump is running, thus accomplishing the following results: stops needless waste of oil, lessens danger of bearings running without oil, lessens frequency of filling oil container, cuts down maintenance and repairs, increases reliability, and adds to life.

THE YEOMANS AUTOMATIC OILER FOR VERTICAL SHAFT CENTRIFUGAL PUMPS

This economizer consists of a multiplex lubricator of liberal capacity with individual adjustable sight feeds for all guide and thrust bearings requiring gravity lubrication, the needle valve in the oil container being automatically opened and closed by a diaphragm mounted on top of the lubricator and connected by copper tubing and piping to the pump discharge. The device is ordinarily mounted on a flanged pipe support on sump cover or plate close to the motor.

Permanent, Portable, Steel Snow-Fences

A snow-fence that is built on the principle of the old-style railroad fence has been put on the market by the Northfield Iron Co., Northfield, Minn. The posts are of pressed steel, and the galvanized No. 26 gage iron boards slip upon a loop hook which holds the board in the desired position against the post. They are about twice as heavy as ordinary agricultural posts, and will stand pulling and redriving over and over, without damage. They can be driven into frozen ground or even through shale or layer rock without injury.

The posts are furnished one every eight feet, and they are economical to haul and install. They are compact and easy to store and easy to take down. They cannot rot, burn, break or be stolen. The galvanized steel boards have a life of thirty years.

When erected at an angle, according to the simple principle of deflecting the wind down to the ground just back of the fence, the fence will stay clear of snow, keeping the snow in one big drift just before it reaches the roadway. It does not sag because of breakage or uneven stretching of wire, and requires no stretching or other attention in erecting. It fits the contour of the land, no matter how rolling. It is just as effective after 48 hours of blizzard as the first hour. According to the manufacturers, two men can drive posts and set up from 2,000 to 3,000 feet of fence per day.

Committee of Engineers Appointed by Brick Association to Study Highways

The National Paving Brick Manufacturers Association, Chicago, Ill., has announced through its President, F. L. Manning, that a committee of engineers has been appointed and authorized to proceed with such surveys, tests and investigations on highway construction as would result in developing and codifying existing knowledge and be of benefit to road users and road builders. The committee is composed of William H. Connell, Chairman, Past-President, American Road Builders' Association, and Engineering and Chief Executive of the Pennsylvania State Highway Department, 1923-27; Warren R. Neel, who, as State Highway Engineer of Georgia, has had supervision of approximately $60,000,000 in road and bridge work; Perry J. Freeman, Highway Testing Engineer, who organized the State Highway Testing Laboratory of Kansas; and Frederick J. Cellarias, consulting engineer, of Dayton, and formerly Engineer for that city.

A Tractor-powered Grader

A heavy-duty motor grader with the Caterpillar 2-ton tractor as the power unit, has been produced by The Galion Iron Works & Manufacturing Co., Galion, Ohio. This new grader combines the power, dependability and positive traction of the tractor with the well-known Galion frame, blade and operating parts.

Cast steel brackets form the main attachment between the grader and the tractor, while the attachment at the front of the tractor is by means of a spring-mounted yoke. Four clamps and a few control extensions removed, make it possible to raise the grader frame and remove the tractor for separate use.

The assembly is simple. The parts include the new firm-balance front block which, while permitting all necessary freedom of motion for the front axle on uneven ground, removes all swinging of the frame on the front axle mounting, which tends to cause uneven blade action.

Machine-cut E-Z lift gearing operating in oil at the bottom of an oil-tight gear case, sturdy lift springs, 40-inch lift wheels, extra curved moldboard, in 8-, 10-, 12- and 14-foot lengths, machine-cut worm for side shifting moldboard, enclosed worm steering gear and many other fea-

The Mark of Quality

We find that Firestone Pneumatics are much more satisfactory in every way. We have already had several runs on soft roads which would have been impossible for us to make without them. We are very well pleased with our Firestone Tires. They are giving us excellent service.

James Kennedy
Chief, Cedar Rapids Fire Dept.
Cedar Rapids, Iowa

BETTER TIRES
Backed by Better Service

Firestone Gum-Dipped Tires, with their extra-strong sidewalls and long-wearing, road-gripping non-skid treads, are more and more coming to be the choice of Fire Departments.

The Firestone Gum-Dipping process adds to tire life and safety by saturating and insulating every fiber of every cord with rubber, minimizing heat and friction.

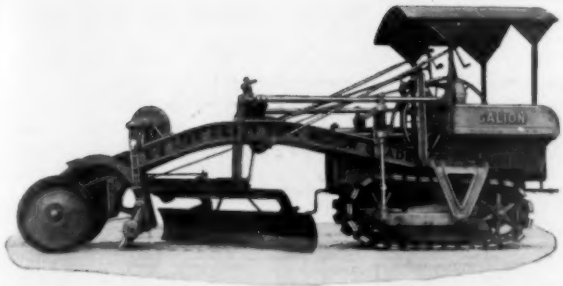
Your local Firestone Dealer has the special equipment and the training to give you quick, efficient tire service without tying up apparatus or taking it out of the station. Call your dealer today and see how he is prepared to save you money and serve you better.

MOST MILES PER DOLLAR

Firestone
GUM-DIPPED TIRES

AMERICANS SHOULD PRODUCE THEIR OWN RUBBER. Harvey S. Firestone

Yes—we should like you to mention THE AMERICAN CITY.



THE GALION HEAVY-DUTY GRADER WITH CATERPILLAR 2-TON TRACTOR

tures, combine to make this a very satisfactory and easy-operating motor grader.

The field of this grader is extended and its usefulness increased by three very practical attachments. The scarifier, controlled from the operator's platform by machine-cut worm gearing, operates in oil. The snow-plow, which is attached to the front end of the grader and operates in connection with the blade, opens a wide path through drifts and fairly deep snow. The multiple blade is attached instead of the regular blade for certain types of maintenance work.

The comfort of the operator on this motor grader has been served not only by ease of operation and accessibility of controls, but also by a sturdy shelter cab, with curtains when desired, and heavy fenders over tracks.

Road-building contractors and highway officials will find this grader valuable in leveling subgrades, spreading and leveling road-surfacing material, leveling fills, and similar work. It will also maintain a berm at the sides of paved roads, peel sod at roadsides, and clean ditches.

A Gun for Applying Hot Asphalts, Tars, Pitches, etc.

A new gun for spraying or shooting liquids of practically any consistency or temperature through special, insulated, metallic hose, any distance up to several hundred feet, has been developed by Quigley Furnace Specialties, Inc., 26 Cortlandt Street, New York. Volume and pressure are under easy control, assuring uniform coverage, regardless of atmospheric temperature. Ability to control the temperature and thickness of coating makes compliance with the most exacting specifications easy, and permits close estimating of material and time.

Compressed air is never in contact with the material in the gun, nor is it used to form the spray. Atomization is obtained by a purely mechanical process. Fifteen cubic feet of air a minute, at 60 pounds pressure, is sufficient to operate the gun. A small, portable garage compressor, operated by either gasoline or electricity, will answer where no air supply is available.

This bitumen gun is an adaptation of the Quigley refractory gun which is used for concrete mixtures and in building concrete structures, stuccoing, plastering, etc. The gun consists of a cast iron cylinder from which the material is forced by a piston capable of developing high pressure. The gun is enclosed in a steel housing, mounted on wheels. Its capacity is 15 gallons, enough to cover approximately 400 square feet of surface.

Two unskilled men can operate the gun after a few minutes' instruction—one man at the nozzle, the other charging the gun and controlling the air supply.

For hot spraying, preheated material is put into the gun through a charging opening. The vent is then closed by a quick-acting valve and the opening of another admits air pressure back of the piston.

Temperature in the gun is regulated by a small self-contained kerosene burner. A large-scale thermometer is always under the eye of the operator. After the gun has been completely discharged, compressed air sends the piston back to the loading position ready for a fresh charge. Reloading the gun requires only a few minutes.

The long hose gives easy access to remote places and permits the location of the gun and melting-pot outside buildings. It also eliminates the necessity of frequently moving the gun and melting-outfit as the work proceeds. Material is forced through the hose with a drop in temperature of not over 3 degrees for each 25-foot length. The discharge end of the nozzle can be bent at any angle so that the operator can reach places otherwise inaccessible.

When the work stops or the job is finished, the gun can be drained of all unused material and the hose cleaned out with compressed hot air, provided by a heating coil located in the housing.

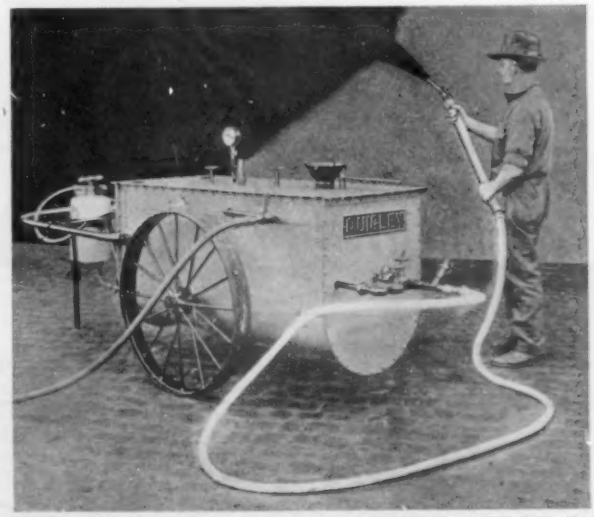
THE NEW FLEET OF HIGH-PRESSURE PUMPERS FOR THE NEW YORK CITY FIRE DEPARTMENT

New High-Pressure Pumping Cars for New York Fire Department

Six high-pressure fire-engines, the first of their kind to be built, have been placed in service in New York City at strategically located points where they will be available for duty in the skyscraper district. The ability of these engines to develop large capacity at high pressure will supply adequate protection for present buildings, as well as for the many taller structures which are likely to be erected in the future. The pumping outfits were built by the American-LaFrance & Foamite Corporation, Elmira, N. Y.

In order to design and build these high-pressure engines for the protection of New York's skyline against fire it was necessary that the pumping unit be simple, smooth in operation, and dependable under severe service conditions. Each has a rated capacity of 1,000 gallons of water per minute at 160 pounds pump pressure, and a capacity of 350 gallons per minute at 450 pounds.

With this new addition of fire-fighting equipment, New York now operates a fleet of American-LaFrance fire apparatus which numbers more than 300 units. Every type of modern fire apparatus is in this fleet, but a large proportion is made up of pumping cars.



THE QUIGLEY SPRAY MACHINE APPLYING ASPHALT TO WALL SURFACE

free outflow

Keep
your city dry
with one-way drains

CULVERTS and storm sewers frequently have their outlets in rivers or bodies of water subject to flood conditions. In such cases the pipe may flood the very property it was installed to drain.

Such a situation can be easily handled by installing a Calco Automatic Drainage Gate at the end of the pipe. Calco Gates are balanced on sensitive double hinges so that the least pressure inside the pipe causes the gate to swing wide, permitting free flow from the pipe. But the moment this pressure reverses, the gate closes tight. There can be no backflow to flood the city or property the drain should protect.

Calco Automatic Drainage Gates come in sizes to fit ARMCO PIPE from 8 to 84 inches in diameter. The gates can be easily attached in the field. An interesting booklet—"Solutions for Drainage and Flood Control Problems"—tells about the use of Calco Gates for flood prevention, for reclaiming salt marshes and for elimination of mosquito nuisance. Your name and address will bring the bulletin. Send for it today.

Forty manufacturing plants throughout the United States and Canada assure you immediate service on drainage requirements, no matter where you may be

For complete information address

ARMCO CULVERT MFRS ASSOCIATION
MIDDLETOWN, OHIO

CALCO Automatic Drainage GATES

no backflow

©1928, Armco Culvert Mfrs. Assn., Middletown, Ohio

A New Type of Highway Guard

A new type of highway guard that is a tough yet elastic fabric of woven wire has been developed by the Page Steel and Wire Co., Bridgeport, Conn. It is called "The Life Line of the Highway," and when hit hard, stretches, holding the vehicle securely with a minimum amount of

PAGE HI-WAY GUARD ERECTED AT A CURVE AND EMBANKMENT ON THE DIXIE HIGHWAY BETWEEN DETROIT AND DEARBORN, MICH.

damage. Only after the most severe impacts is it necessary to repair this guard. A new section can be inserted in a few minutes. It is repaired in the same manner as the fabric is woven, the guard becoming the same as originally.

This highway guard is similar in construction to the chain link style of fencing widely used in the industrial field. Its main features are its strength and elasticity. Each square foot of fabric contains 36 small squares formed with 14 interlocking steel wires, each wire having a tensile strength of 60,000 pounds per square inch. This square flat weave makes the guard easier to erect, easier to get into alignment, and more easily repaired, and causes less deformation after the impact, and there are no torsional stresses from stretching.

Copper-bearing steel, well known for its rust-resisting qualities, is used in this guard. It is made in one standard size—the mesh is 2 inches square, the wire is 6-gage W & M (.192) and the width 24 inches. The pickets are so formed that the mesh is exactly square. They are woven with flat loops. Each picket of the fabric is knuckled (has the ends looped together) at top and bottom.

After the fabric is woven, it is hot-galvanized. This coating of zinc is evenly applied and of uniform thickness. It gives the fabric a light color which makes it highly visible day or night and, in addition, affords the utmost protection against corrosion.

Ease of installation is one of the features of this guard. With a few tools, two men can erect several thousand feet in one day, the quantity depending on the lengths of stretches. The guard will follow any curve on the highway and is adaptable to wood or steel posts. It can be rolled compactly, making transportation easy.

New Appointments by Hersey Manufacturing Co.

Announcement has been made of the appointment of William C. Sherwood, of the Hersey Manufacturing Co., corner of E and 2nd Streets, South Boston, Mass., to the position of Assistant to the President. Mr. Hersey has been in the Hersey organization for thirty years, during the last twenty of which he served as Manager, located at New York. He will take up his new duties in the Boston office. William B. Cambridge, who has been connected with the company for twenty-four years, will succeed Mr. Sherwood in the management of the branch.

Barber-Greene Opens New Office

The Barber-Greene Co., 515 West Park Avenue, Aurora, Ill., has recently established a new branch office in Cincinnati, Ohio. This branch is to be under the supervision of Paul Frederick, District Manager. Mr. Frederick has been with the Barber-Greene Co. for nine years and goes to Cincinnati from the Detroit office, where he had several years' experience as a Sales Engineer. The new address will be Barber-Greene Co., 431 Temple Bar Building, Cincinnati, Ohio.

A Pick-up Sweeper

A pick-up sweeper of The Elgin Corporation, 501 Fifth Avenue, New York, features the following advantages: it sweeps the streets cleanly, quickly and economically; it automatically picks up street dirt and places it in a receptacle from which it can be dumped quickly and cleanly; it is self-contained and self-propelled and has its sweeping mechanism run directly by the power unit; it removes a maximum of dirt from the greatest amount of street surface without being of prohibitive size; it has maximum mobility and turning ability; and it is easy to operate, gives long service, and is easy to repair, and parts are easily replaced.

This unit cleans a path 10 feet wide every time it moves ahead. The working speed is 4 to 6 miles per hour. It has a full-floating, spring-suspended main broom. An unobstructed view is afforded the driver, so that he can see what his machine is doing. The machine has a special cast tank tubular radiator fitted with Elgin design hood inside to give utmost cooling. Power is furnished by a Continental Red Seal *L4* motor, giving 42 horsepower at 1,200 r. p. m. It has the Ross cam and lever steering gear control.

The turning ability is a feature because of the three-wheel design which permits the machine to clean around a right-angle turn without stopping, hitting the curb or missing any dirt. There are a minimum number of chains and other working parts, thereby reducing maintenance.

The 30-inch flexible gutter broom requires only 35 pounds of steel to fill, and the gears of this broom are enclosed in a dust-proof sealed housing to insure long life. The machine is ready for the night cleaning of streets, being equipped with headlights and spotlight.

The Elgin spray system to provide the right amount of water to secure clean sweeping is used on this machine. The water is forced to the street under air pressure, giving a fine, cone-shaped spray. The 200-gallon water-tank is connected directly with a Brunner air-compressor built in, as part of the transmission unit.

The dumping operation is simple. All that is necessary is for the operator to drive to the point where his machine is to be emptied and trip one lever. This lever releases the entire lower front side of the hopper and all of the dirt drops to the ground unaided, requiring a minimum of time.

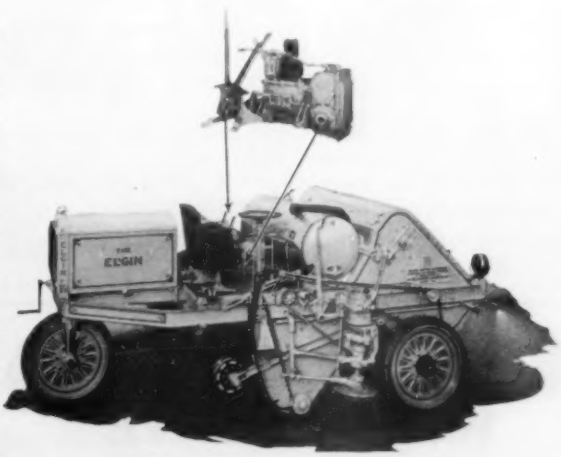
Paradon Appoints Texas Representative

The Paradon Manufacturing Co., 573 Elm Street, Arlington, N. J., has announced the appointment of A. H. Webber, 402 Tennessee Street, Amarillo, Texas, as its representative in the sale and servicing of Paradon chlorinators in the south and southwest section of Texas.

New Engineers for Armco

The Armco Culvert Manufacturers Association, Middletown, Ohio, has announced that J. S. Neibert, formerly Road Construction Engineer, Indiana State Highway Department, has been appointed District Engineer for the Association in charge of work in Illinois, Indiana, Michigan and Kentucky.

The Armco Culvert Manufacturers Association has also announced the appointment of Harry E. Cotton as Municipal Engineer. Mr. Cotton was formerly Assistant City Engineer of Omaha, Nebr.

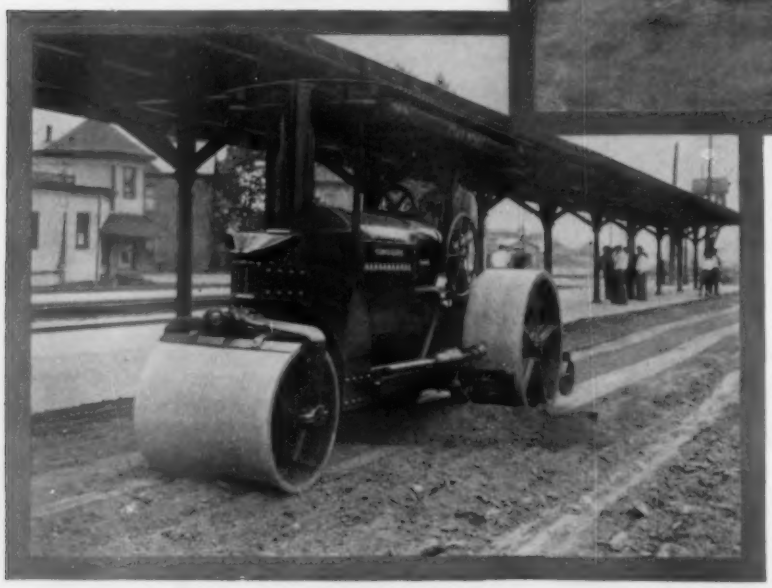


THE ELGIN AUTOMATIC PICK-UP SWEEPER

A water-bound macadam drive at a railway station was in very bad condition, rough and full of holes. A Galion International Roller was put onto the job with the results illustrated here.

This is a typical illustration of the work of the Galion International Roller with planer and scarifier.

These three uses — scarifying, planing and rolling—in all their applications—and its use as a tractor, make this machine very valuable to contractors, to cities and villages, to states, counties, and townships, to parks, country clubs, school boards, flying fields, and in fact to all who have roads, streets and drives to build and maintain.



Scarifying the Surface

The scarifier was first put into operation tearing up the surface to the depth of the hollows until it was thoroughly loosened and ready for the next step.

Planing It Smooth

The planer was adjusted and the surface leveled beginning at the stone curb and working across the width of the drive. In the process all hollows were filled and the surface made thoroughly even.

Rolling It Firm

The smoothed surface was now rolled until it was firm and smooth, making a solid, level drive of what had been nearly impassable; and this was done without the addition of any new material whatever.

A GALION SMALL ROLLER

is the most useful piece of equipment any city or village can own. It's a one man four-purpose machine — Roller, Planer, Scarifier, Tractor.

Hundreds of owners, cities, villages, counties, townships and states are using Galion small rollers with real satisfaction.

With one of these rollers you can roll hot-patch, cold-patch, bricks, fills, lawns, school grounds, chips in resurfacing macadam or anything that needs rolling.

You can scarify, plane and roll streets and drives, leaving them in perfect condition.

With the planer you can grade roads, fills, etc., and plane a subgrade to exact requirements.

The scarifier is sturdy and powerful and will readily tear up rough gravel, macadam or similar street surfaces—either air-pressure or hand operated.

Galion small rollers are made in 3- to 8-ton sizes with Fordson and McCormick-Deering tractors as the power unit. Gearing adds nearly 50 per cent to the drawbar-pull of the tractor.

Let us give you names of cities now using Galion Small Rollers. Prices and literature are yours on request. Write.

The Galion Iron Works & Mfg. Co. Galion, O.

The World's Largest Road Machinery Plant—Representatives Everywhere

GALION ROAD MACHINERY

WILL SERVE YOU BEST

Galion TRADE MARK

Yes—we should like you to mention THE AMERICAN CITY.

Badger Meter Adds to Sales Staff

The Badger Meter Manufacturing Co., Milwaukee, Wis., has announced the appointment of A. C. Hollowell, E. L. Holzhaeuser, and John G. Valentino as members of its sales organization. Mr. Hollowell, formerly with the Water Department of Kansas City, Kans., will represent the company in North Carolina, South Carolina, New Jersey and Eastern Tennessee, and will have his headquarters at Atlanta, Ga. Mr. Holzhaeuser, a member of the Badger organization for the past three years, will represent the company in the Wisconsin territory, with headquarters at the home office. Mr. Valentino will be located at Savannah, Ga., and will represent the company in the states of Florida, Alabama and the southern part of Georgia. He was formerly Superintendent of the Water Department, at both Savannah and Waycross, Ga.

Houston, Texas, Dressing Up for Convention

Houston, Texas, which is to be host to the National Democratic Convention this year, has recently placed an order

ONE OF THE NEW ELECTRIC LIGHT STANDARDS BEING ERECTED IN HOUSTON, TEXAS

with the Union Metal Manufacturing Co., Canton, Ohio, through its representative, the Southwest General Electric Supply Co., for 96 twin-light pressed-steel lamp standards. These standards are of the latest design and construction with the mounting height of the lamps 19 feet, 9 inches, above the ground line. This installation is for Main Street and will be completed prior to the opening of the convention in June.

Houston has also placed an order with the same manufacturers for 21 traffic standards. These standards are of the same general appearance and design as the lighting standards and will mount a side bracket type signal. A harmonious design will thus be carried out in the new installations.

THE FIRE-TIGHT "PARKOVEN"

An Outdoor Cooking Unit

An outdoor cooking unit that is primarily constructed for recreational parks has been developed by the Sanitary Equipment Co., 16th and Holmes Streets, North Kansas City, Mo. It is a fire-tight oven where campers and others can cook their meals and burn rubbish safely and in a sanitary way.

This "Parkoven," as it is called, carries an all cast iron top of ⅝-inch plate. The tops are sectional and carry griddle plates and eye plates of a number of eyes each. The cooking oven combustion chamber is so constructed that the cooking plates absorb a very high percentage of heat. The oven carries a smokestack, and in the smokestack a standard incinerator is incorporated. Hot gases passing from the combustion chamber of the Parkoven pass through into the incinerator chamber, drying out what refuse may be stored therein and igniting this.

Serious burning accidents are prevented by the use of this unit, since the cooking fire and rubbish fire are confined in one fire-tight chamber.

Little attention is required in the operation of the unit, as every time a fire is started in the cooking oven, it automatically ignites the incinerator. It is only necessary for park attendants to see this unit once each week or ten days and at that time rock the incinerator grates and remove the ashes.

Eastern Brick Manufacturers Appointments

The Eastern Paving Brick Manufacturers Association, Lincoln Building, Philadelphia, Pa., has announced the appointment of Joseph B. Shaw, formerly Deputy City Engineer of Utica, N. Y., as District Engineer for the Association, with headquarters at Utica. Walter F. Faber, former General Manager of the Fort Pitt Construction Co., Pittsburgh, Pa., has been appointed Field Engineer of the Western District of the Association, with headquarters at Pittsburgh, Pa.

Cal Moves to New York

The Cal Division of the North American Cement Corporation on March 1 moved its headquarters from Hagerstown, Md., to the general sales offices of the corporation, 285 Madison Avenue, New York. Richard H. Catlett, Manager of the Cal Division, was transferred to New York in his former capacity.

SCENE TAKEN IN FALL RIVER, MASS., TWO DAYS AFTER THE DISASTROUS CONFLAGRATION

A Barber-Greene loader removing ice from the street. This ice was formed by the spray from the fire streams

AS an aid in furnishing the facts about airport equipment, the Butler Manufacturing Company offers the services of an airport engineer who makes his calls by plane and consults with city authorities or individuals without charge.

THIS experienced pilot knows both the manufacturer's possibilities and the practical flyer's needs. He is qualified to advise you and help you. His experience should enable you to save both time and money.

THE Butler Steel Hangar is of the most modern and serviceable character. It is non-combustible. The wall and roof sheets are made of 24-gage, tight-coated galvanized steel with deeply drawn paneled corrugations, formed in our own presses and much deeper than ordinary mill corrugated sheets. Sheets are bolted together and to the steel frame with galvanized bolts. The entire construction is solid and rigid. Plans are already drawn for our standard hangars. Plans can be made for hangars to meet special requirements.

BUTLER Steel Hangars are made to admit plenty of light. Doors are mounted on large flanged wheels, equipped with roller bearings, and roll on steel rails. They open and close so easily that even a child can operate them.

THESE ideal hangars are complete in every detail and are shipped ready to erect without delay. They are designed to admit of enlargement economically. They may be taken down if necessary, moved and re-erected practically without loss of materials.

AN inquiry will bring descriptive literature.

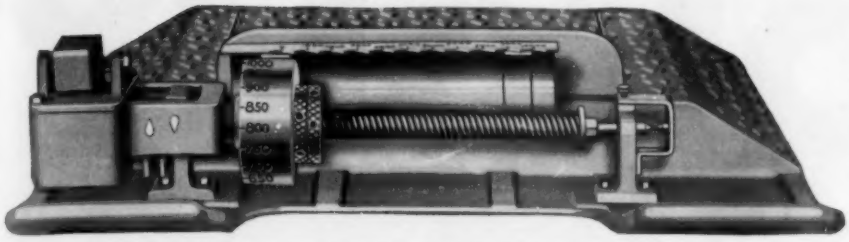
Truck Tanks for Refueling Planes

Butler also makes truck tanks that save time in refueling planes. The tank is welded steel, divided into compartments that hold ample quantities of gasoline and lubricating oils. These tanks are equipped with pumping units for transferring oil products from truck to plane. Write for illustrations, specifications and prices.

TRADE STEEL BUTLER PRODUCTS MARK

Butler Manufacturing Company

Kansas City, Mo. **Minneapolis, Minn.**



THE FAIRBANKS MORSE PORTABLE AUTO-TRUCK WHEEL-LOAD SCALE

Wheel-Load Scales for Auto Trucks

In order to weigh and regulate truck loads and enforce road preservation laws at small expense by highway commissioners, wheel-load scales have been made available by Fairbanks, Morse & Co., Chicago, Ill. By using these scales and thus limiting the load on every truck wheel to one that the road is built to carry, many years will be added to the life of the highway and much of the public funds saved. Accuracy was the primary motive in the design of these scales. Tests prove them accurate and sensitive to less than the minimum graduation on any load up to full capacity.

Aluminum alloy is used in the construction of these scales, giving great strength without excessive weight. Although the scale is built to weigh loads up to 15,000 pounds, its own weight is so low that it may be handled readily by one man. This ease of handling enables the user to carry the scale about and to make many weighings in a day.

In weighing a truck, the scale and an aluminum block or dummy of the same height are placed in front of the wheels to be weighed, and the car is driven on to them. The dummy keeps the truck level and evenly distributes the load so as to give the exact weight on the wheel. Two scales can be used in the same manner to give more rapid weighing.

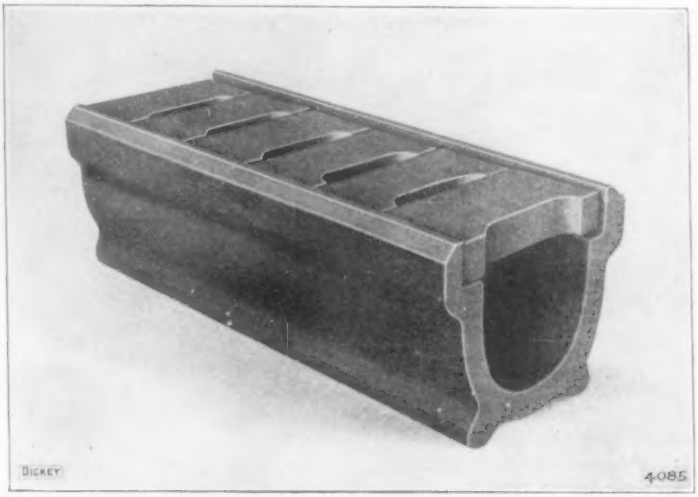
Underdrain Tile for Trickling Filters

A new type of vitrified underdrain tile is being offered for trickling filters by the W. S. Dickey Clay Manufacturing Co., Kansas City, Mo. This underdrain tile is U-shaped, as shown in the illustration, and has six covers to each 2-foot length. The shape of the tile gives a confined channel, facilitating rapid outflow of the trickling filter effluent. The apertures in the covers permit the flow of air from the underdrains up through the filter body, giving sufficient oxygen.

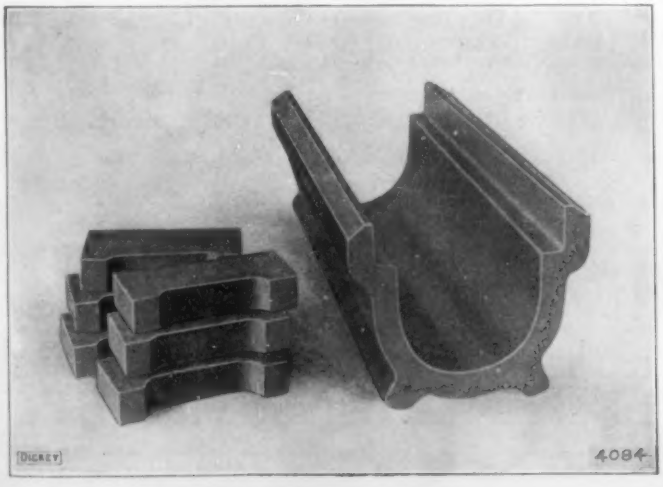
These tiles may be laid on 18-inch centers supported on a concrete base, with the tile pushed ½-inch into the concrete before it sets, to give greater stability. Then lean concrete may be used to fill the interchannel spaces.

Another method of installing it is to set the tile on solid ground and fill in with portland cement concrete between the tiles. A still further variation is to dig trenches in the solid ground, so that about one-half of each tile is below ground level. In this manner solid ground takes the place of a large amount of concrete in the inter-channel spaces. Cement mortar is then placed around the joints, at the sides and underneath, forming anchors.

The careful design of these tiles makes them a fool-proof unit for the construction of trickling filters at several treatment plants. The vitrified tile furnishes a smooth surface, facilitating the flow of the effluent.



UNDERDRAIN TILE FOR TRICKLING FILTERS



SECTIONS OF UNDERDRAIN TILE

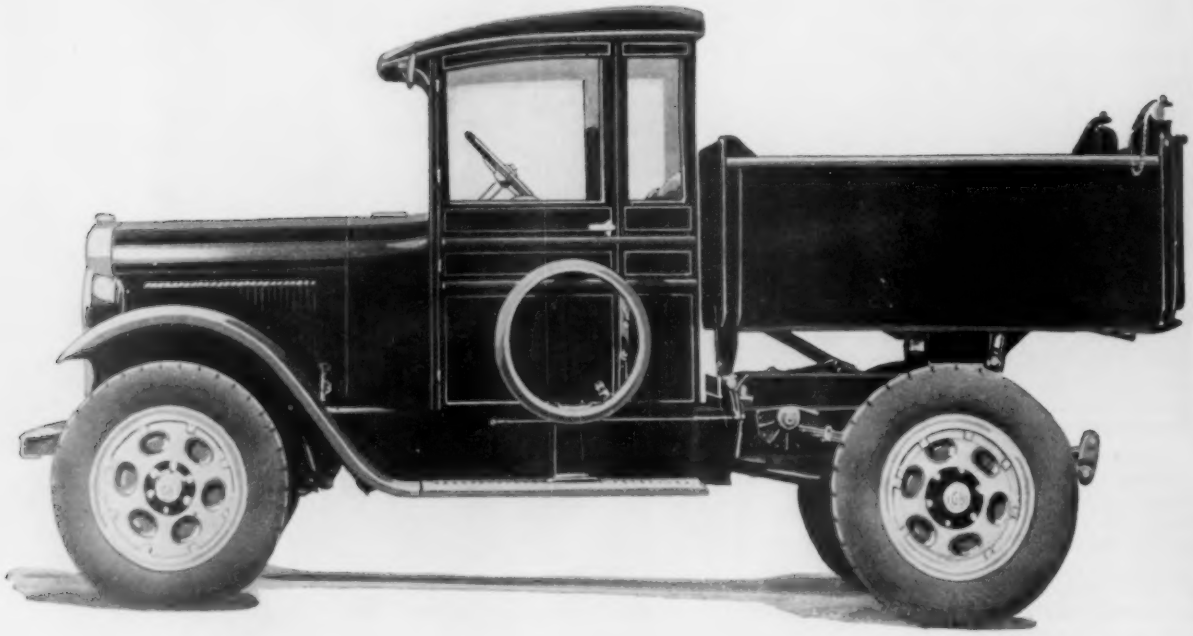
Yeomans Appoints Peoria Representative

Yeomans Brothers Co., 1433 Dayton Street, Chicago, Ill., manufacturers of sewage ejectors and pumping machinery, has announced the appointment of H. F. Kircher and Co., Lehman Building, Peoria, Ill., to represent it in the central part of Illinois. This company will handle the complete Yeomans line, which includes sewage ejectors, bilge pmps, centrifugal pumps and condensation return pumps.

S. M. Williams Now with A. G. C.

S. M. Williams, who is well known in the motor-truck industry as former General Sales Manager of the Garford Motor Truck Co., and Vice-President of the Autocar Sales and Service Co., and, in the construction industry, for his work on uniform questionnaires to determine the qualifications, including responsibility, experience and integrity, of bidders on highway projects, has been appointed Manager of the Engineering Construction Division of the Associated Contractors of America. Mr. Williams' office will be at the headquarters of the organization in Washington, and his work will include the development and promotion of activities of interest and aid to construction, covering highways, public works and railroads.

ECONOMY



ECONOMY gets right down to dollars and cents. When economy goes beyond initial price and makes itself felt in operating and maintenance costs throughout a long truck life, it points the sure road to profits.

Low operating costs, dependability, power and speed stand out boldly in the experiences of the hundreds of thousands of operators of Graham Brothers Trucks and Commercial Cars . . . . And the economy becomes most complete and convincing when the extremely low initial prices are noted—and the fact that similarly priced repair parts and service are available from Dodge Brothers Dealers . . . *always* and *everywhere*.

Safety, driver comfort, ease of operation, fine appearance, complete trucks to fit any business . . . . all these add their weight in influencing seasoned operators to purchase more than Sixty-five Million Dollars worth of Graham Brothers Trucks and Commercial Cars a year.

2-TON, 6-Cylinder Special Road Builder, Chassis - - - - - - - - - - - $1045

2-TON - - - - $1595
6-cylinder engine, 4-speed transmission, 4-wheel brakes (Lockheed Hydraulic)

1½-TON - - - - $1245
4-speed transmission, 4-wheel brakes (Lockheed Hydraulic).

1-TON - - - - $895

¾-TON COMMERCIAL - $670

Chassis Prices f. o. b. Detroit

½-TON PANEL DELIVERY CAR $770
(*Complete with body f. o. b. Detroit*)

GRAHAM BROTHERS TRUCKS

Sold and Serviced by Dodge Brothers Dealers Everywhere

Built by Truck Division of Dodge Brothers, Inc.